DECEMBER, 1921

THE MINING CONGRESS JOURNAL

VOLUME 7 NUMBER 12

H. C. MORRIS
Chief of the Fuel Division
Bureau of Foreign and
Domestic Commerce

In This Issue:

Operators' Committee Confers With Secretary Hoover

Some Anthracite Facts And Problems
By Edward W. Parker

Protecting the Chemical And Dye Industry
By F. G. Moses

Valuation Terms As Applied In Mining
By William H. Kobbé

Character Study of Senator Smoot
By Ira L. Smith

Standardization Not A Bar To Progress
By E. D. Knight

Railroad Strike Inevitable
By C. H. Farrell

Gold Production Vanishing
By H. N. Lawrie

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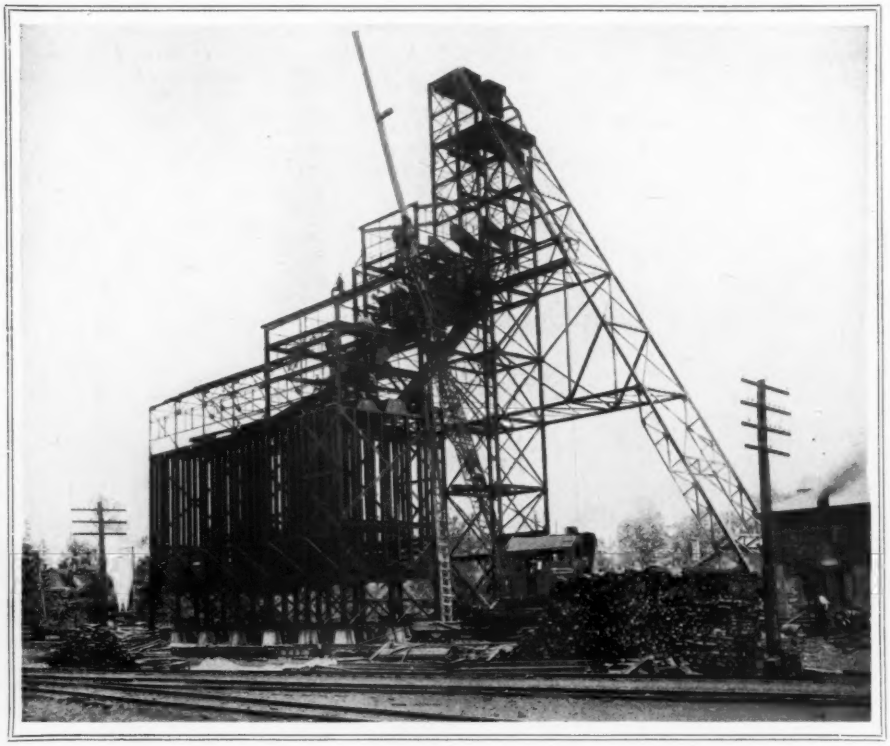

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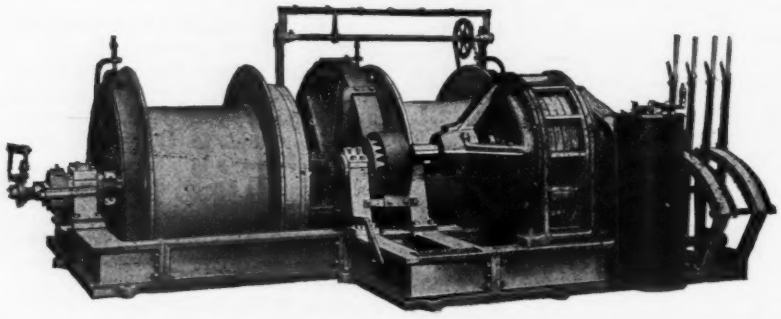

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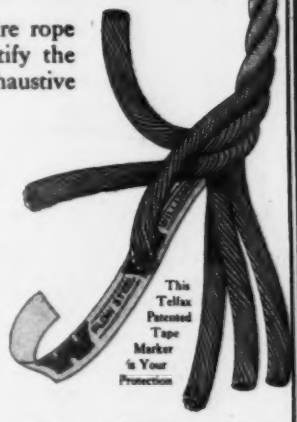

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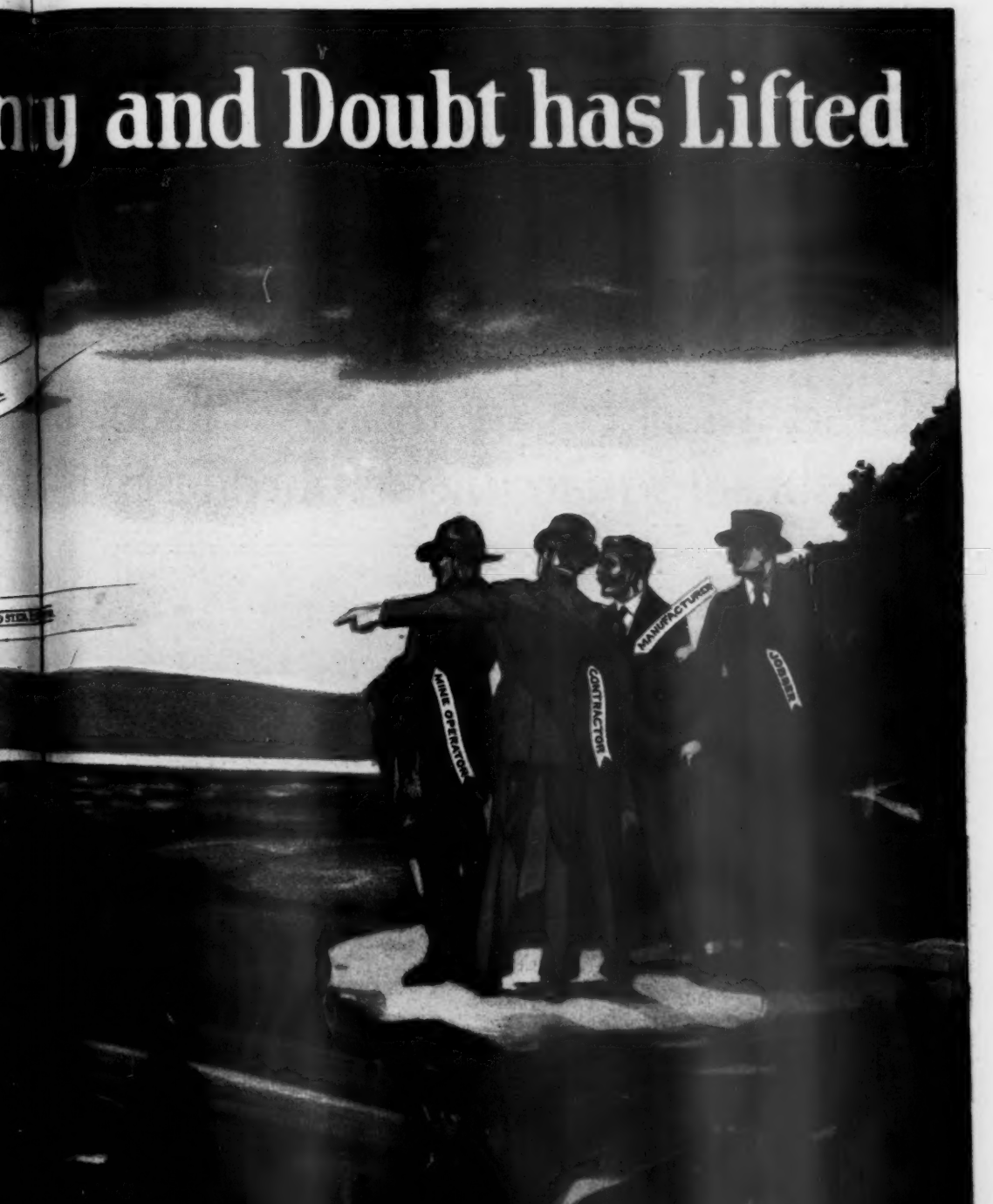

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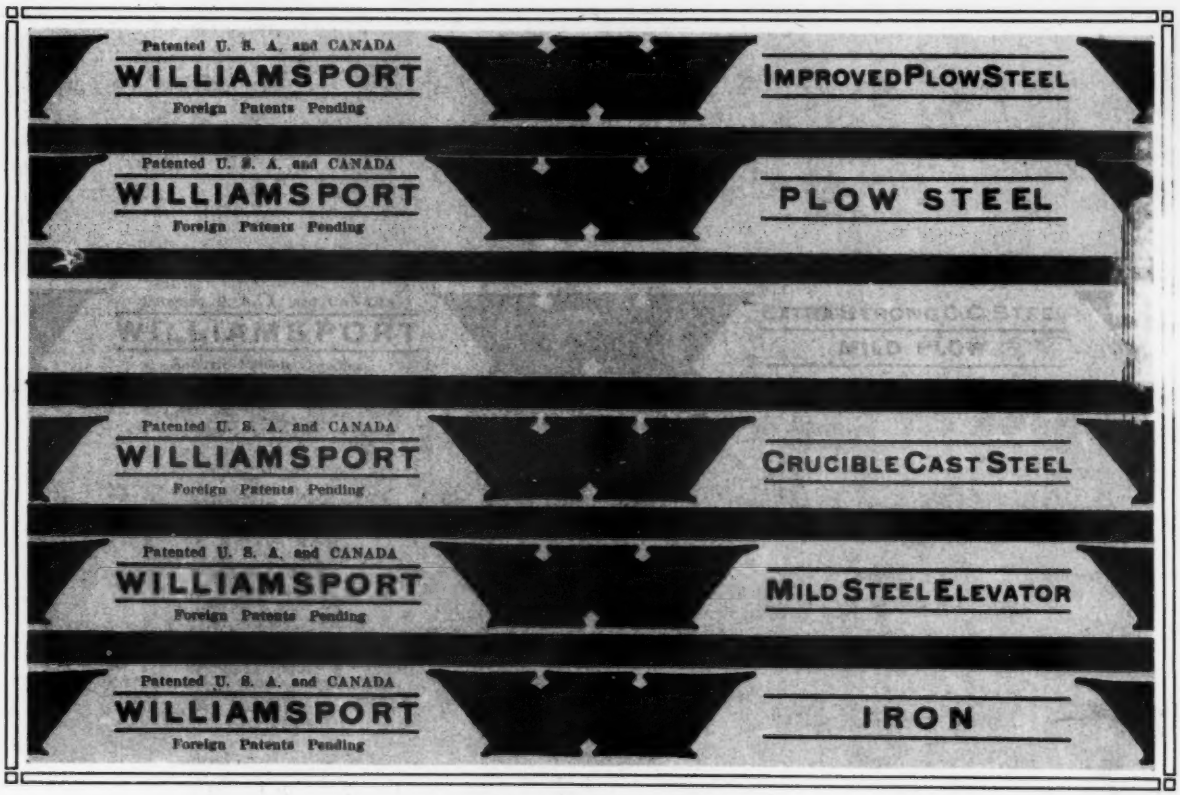

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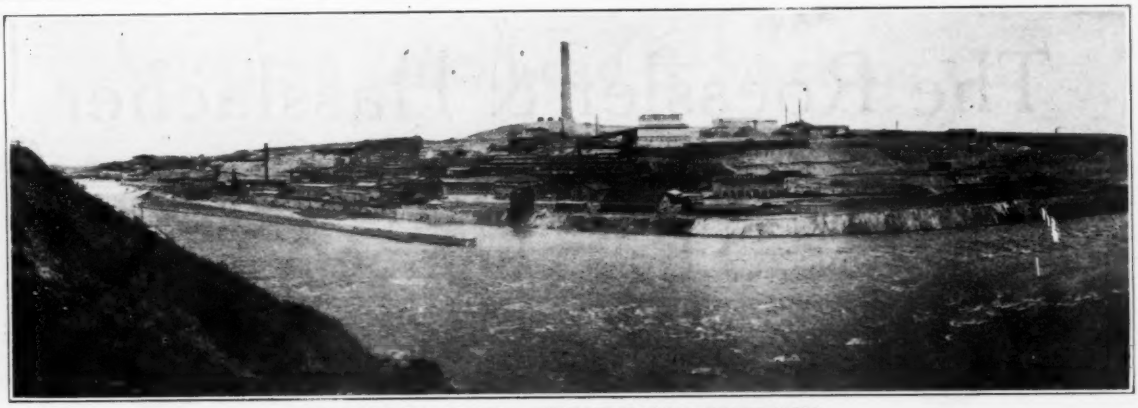

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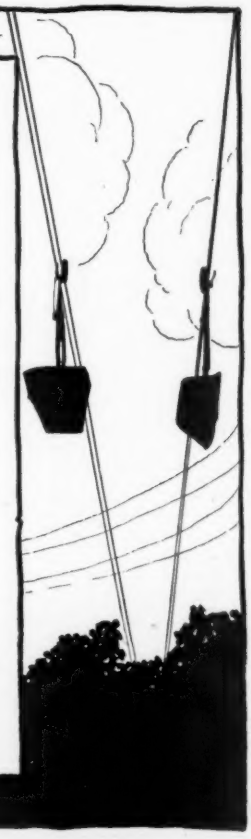

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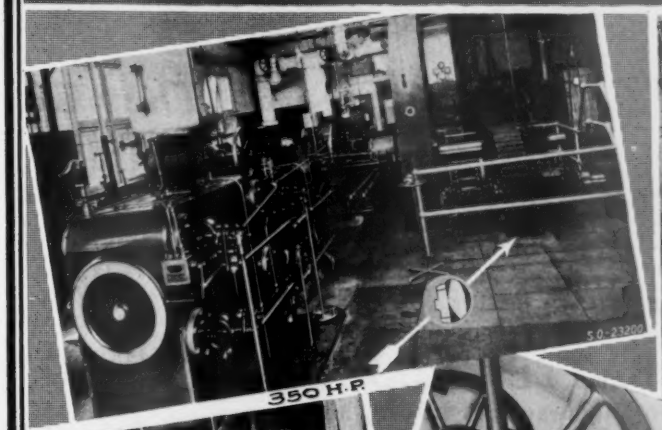

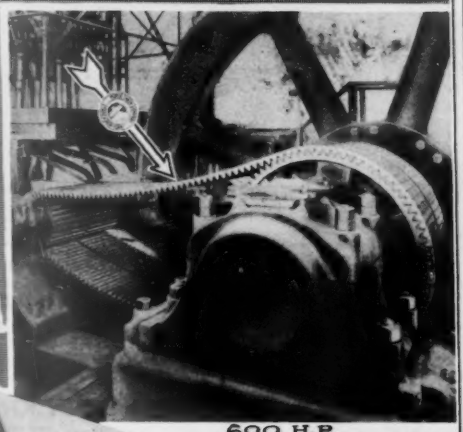

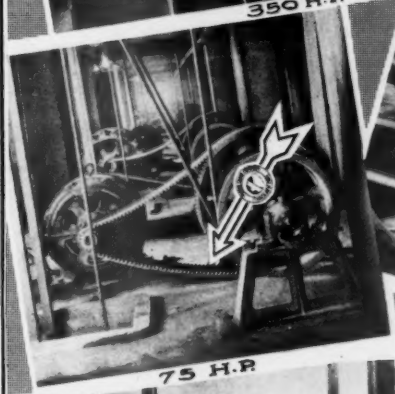

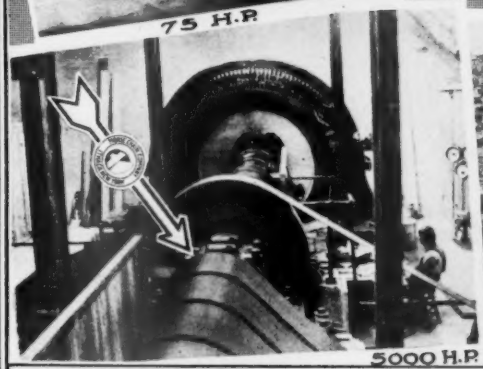

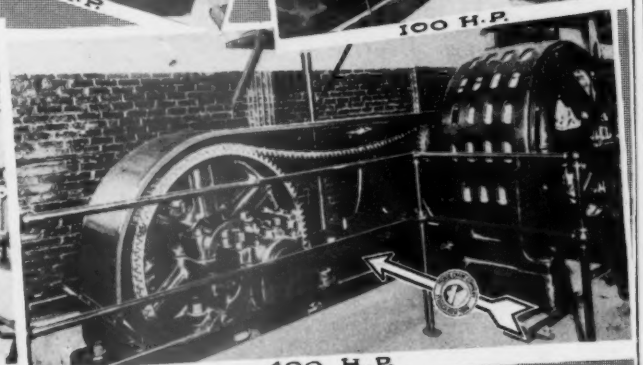

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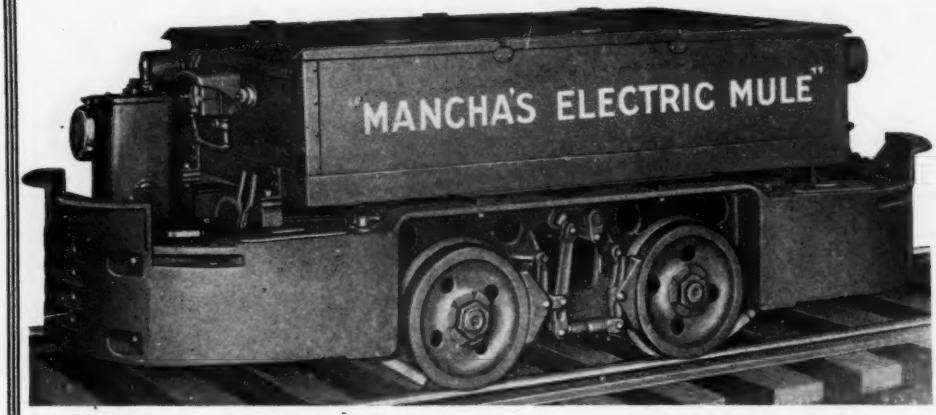

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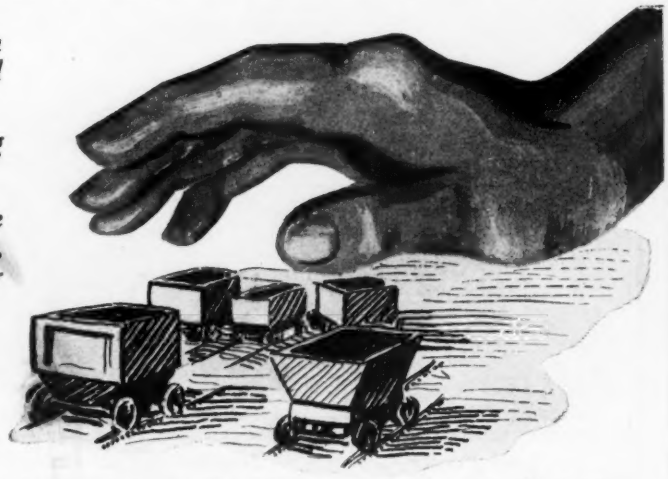

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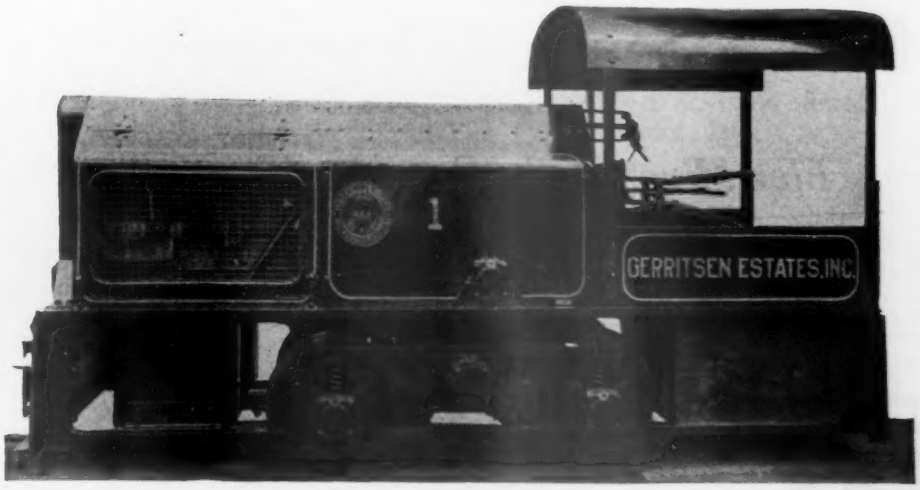

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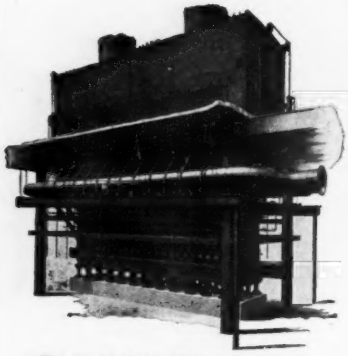

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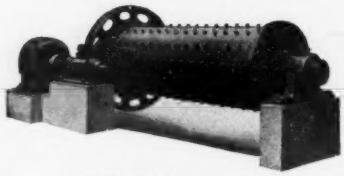
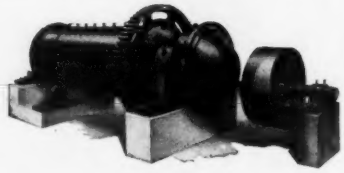
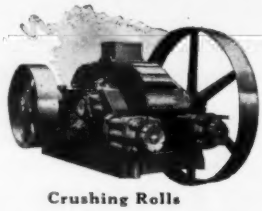


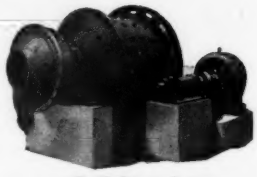
Ball Peb Granulator



Rod Mill



Crushing Rolls



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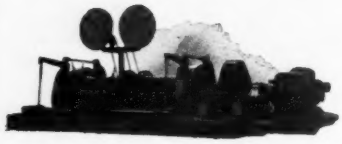

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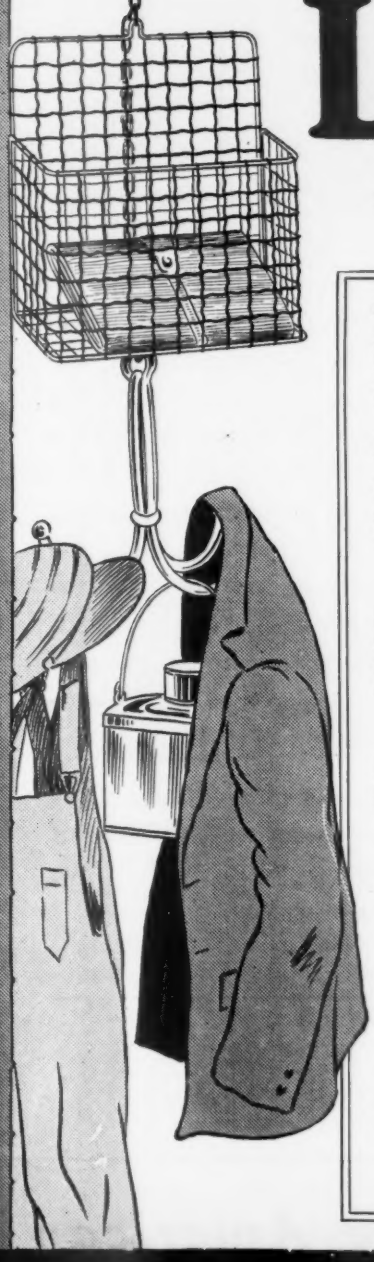

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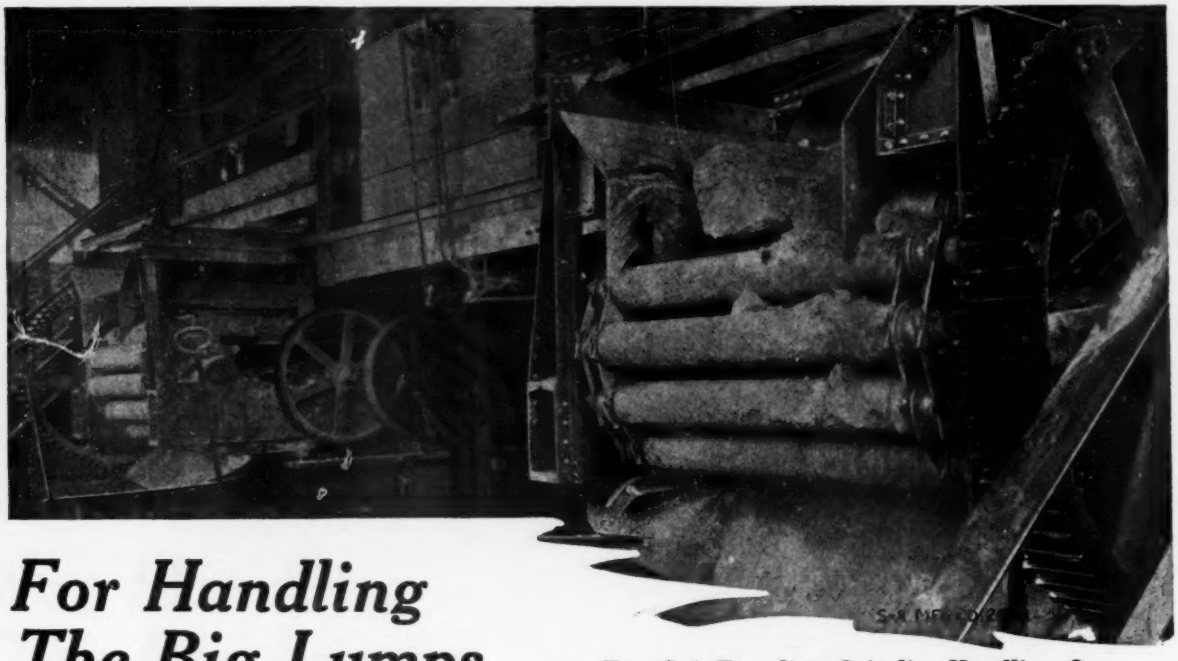

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"PEACE WITHOUT VICTORY"

AMONG the many intricate and difficult questions now under discussion by the Disarmament Conference none present greater difficulties than that outlined by M. Briand in his appealing address in which he set forth the reasons why France cannot meet the apparent requirement of the situation by a large reduction in her military forces. At no time since the armistice was declared has the cruel iniquity of that damning phrase "Peace without victory" been so clearly manifest. France desires peace, as does all of the allied world. France had seen the preparation for conquest of its German neighbor since 1872 in which every agency had been made to yield itself to the growth of military power. Not only intensive burdens upon her people, but even the degradation of her women were made to serve this one great aim to make herself the military dictator of the world. And then, at a time when the Nobel PeacePrize was about to be awarded to Kaiser Wilhelm, without warning or excuse, the storm of wrath was unloosed, and all international obligations were ruthlessly violated. Temporary success so swelled her bloated brutality that the United States was at last forced into the carnage. When it became apparent to Germany that the destructive power of the United States was rising en masse to crush its aspiration; when the Kaiser was brought face to face with that condition which he described as, "America gone war mad," the German war machine hid itself behind an armistice made possible by a silly sentimentalism. Peace was made months too soon and before Germany was defeated, thus saving her from the ruination which she had wrought upon her neighbors and leaving her in the position as described by M. Briand of having 100,000 trained officers upon her police force, with 6,000,000 trained men available for quick service, and her industrial plants undisturbed and in working condition through which war supplies may be quickly supplied for this vast army standing over the line with its unavenged grudges strong and controlling.

That a grave war in which millions of lives were lost and half the world's available wealth extinguished should be terminated without vindication is the greatest blunder in all history—"Peace without victory." The world's peace looks now upon a Germany with the ability to quickly place itself upon a war footing with her unavenged grudges intensified by her failure to crush the world and her enduring and continuing resolve to some time accomplish her hellish purpose. It is difficult to see how France can do other than follow the course mapped out by M. Briand in his matchless address to which the heart of America will respond without limit.

THE DUTY AND OPPORTUNITY OF AMERICA

THE POSSESSION of wealth always carries with it a burden of responsibility. The possession of the world's recognized tool of wealth—gold—entails a responsibility for so using that tool as to serve the world's commercial necessities. Today the United States possesses vastly more than its share of the world's gold. It stands in the unique position of not only controling the large part of the world's gold but the additional advantage of having other nations obligated to pay to it in gold a sum vastly in excess of the total amount of gold in the world.

This condition brings to us a surplus of gold while those other nations, whose prosperity is vastly important if not necessary to our own welfare, are unable to do business because of the entire breaking down of credit. The United States, if it shall act with collective intelligence is in position to set world's industries in motion and in turn to revive our own industrial activity. This fact is recognized by the best thinkers in the United States as well as those abroad.

The London Times in a recent issue editorially declares that:

"Unless the United States shoulders the burden of world finances only a miracle can divert the financial destruction which is ever drawing nearer," * * * "America alone can stabilize credit by devising some scheme for financing the nations now hovering on the brink of insolvency," * * * "In such an event the United States will suffer incalculable losses. The only way out is for America to observe the precedent set by the Bank of England when it saved American credit in a minor crisis by drawing gold from all the world to loan where it was most needed. America holds the world's gold today. The time is short, for, should Germany fail to pay, France may march into the Ruhr region and then who can say what disarmament proposals may not vanish in the smoke of war."

It is not only the duty of the United States but its great opportunity to develop some plan by which European credits may be reinstated to the extent justified by wealth and productive capacity. Where is the statesman who will present the plan which will command the approval of the American people and which can quickly furnish to the industries of Europe the tools which will make possible effective operation?

GETTING CLOSER TOGETHER

THREE FACTS are of tremendous importance to all mining men:

(1) It is asserted that the western states hold the largest coal deposits in the world.

(2) It is practically conceded that the western states have the richest oil fields in the world.

(3) Oil men and coal men from the eastern and central states and coal, oil and metal mining operators met at the Chicago convention of the American Mining Congress and manifested an unwonted interest in each other's welfare.

It was not always thus. Gold, silver and copper producers who concerned themselves but little with affairs east of the Mississippi were not unknown in former years, while coal producers rarely thought of offering assistance to or expecting co-operation from anybody from the Rocky Mountains or the deserts or the plains. The minerals produced in the different sections were so entirely unlike that operators from the east and the west proceeded on the basis that they had nothing in common and at times even permitted the impression to grow that their interests were naturally conflicting. Those who clung to this view accomplished nothing for the mining industry as a whole and very little for themselves.

But all of this has changed. The last decade has seen all branches of the mining industry come closer and closer together. Concerted action has brought benefits in proportion to the added strength which unity of purpose always gives. Witness the depletion, discovery and invested capital clauses, which save the mine owners hundreds of millions of dollars yearly; the establishment of the Bureau of Mines, with consequent improvement in mining methods and lessening of the risk hazard for workmen; the enactment of legislation reimbursing producers for war losses sustained at the behest of the government; the ever-growing recognition accorded the industry by the government, the press and the public until now the establishment of a Department of Mines is almost a certainty. Still greater achievements were forecasted at Chicago, where the solidarity of the mining industry was demonstrated more clearly and forcefully than ever before. At Chicago, coal operators frankly asked for the help of the metal miners, and western operators freely expressed their gratification at the interest taken in their problems by, and the proffers of assistance from, those who came from the Lakes region, the seaboard and the Gulf. These tenders were accepted, and even now men representing all branches of mining from all parts of the country are working together in an effort to solve some of the knottiest problems with which they and the nation are confronted.

The west is now a coal country, an oil producing country. The last sectional phase of mining has disappeared; the one-ness of the industry is accomplished beyond dispute. Just as the cotton planters, the wheat raisers, the corn growers, the truck gardeners and the chicken breeders are all farmers, so the metal men, the coal, oil and nonmetals producers of all the states and territories are all miners, and their interests are mutual. They are standing together, planning together and acting together today for the protection of those interests, and the most encouraging sign of the times is that they will continue to do so.

AN INDUSTRIAL REQUIREMENT

BUSINESS CONDITIONS are gradually improving. A stable business will adjust itself to any conditions. Low prices will be raised to the higher levels, or high prices adjusted to the lower levels, as the circumstances require, but low prices for labor and high prices for commodities cannot prevail at the same time without privation to wage earners. In many lines wages have been reduced below the corresponding decrease in commodity prices and thus an undue burden comes upon him who has accepted the lower wage scale. Upon the other hand, the partial lowering of the commodity prices gives an undue advantage to that wage earner who, through those forces which temporarily set aside the law of supply and demand, has been able to maintain the wage scale established during the high priced period of the war. Unless downward adjustments be made in two lines of employment it will become necessary as a matter of justice to raise other levels to that standard. The coal miners and the railroad employes are holding to a wage level above the average price level. On account of the high levels in the costs of transportation and power an undue burden is put upon industry and an unbearable burden upon those who either have accepted wage cuts or who are without employment because the cost of power and transportation prohibit the operation of the industry which furnishes employment. There would seem to be a public necessity for reduction in both of these wage scales to that point which is justified by the present commodity price levels as compared with prewar wage conditions. Either these adjustments must come, or other price levels must be brought up to somewhere near that standard. The $2 a day man cannot buy the product of the $10 a day man and the business which can pay $2 in wages cannot afford to operate if forced to pay a higher wage scale except it is producing some necessity so great that the public must pay for it no matter what it costs. The law of supply and demand will eventually reach this situation. Is it not wise that labor unions shall apply the doctrine of reason to wage adjustments rather than the doctrine of force as manifested in the strike?

WHERE MINE TAXATION DIFFERS

EVERY PROPOSAL for taxation of mining properties should be based upon a thorough knowledge of the risk which attends mining investments and the short life of most mining properties. In these respects mining is different from any other business in the world, and to this extent it must always be given separate consideration.

Not every bona fide investment returns a profit. It is not an unheard of thing for many thousands of dollars to be expended under the most scientific and business-like direction without the extraction of a ton of ore. Senator Reed Smoot recently stated his belief that if the cost of discovery of all the precious metals mined in the United States were computed it would be found that the outlay amounted to two dollars for every one-dollar's worth of ore taken from the ground, and that among mines which do produce ore, those which are operated profitably for a period of ten years are considered better than ordinary. Such a mine costing one-million dollars could produce ore valued at one hundred thousand dollars above operating expenses each year for ten years and still be a losing proposition. The owners would be receiving only the year's pro rata portion of their original capital, with no interest whatever on the investment.

Allowance is made for this phase of the situation in the depletion clauses of federal tax enactments, but in many of the states no recognition whatever is given thereto. This is true particularly in those states where the mining operators are not organized, or where they fail to work in co-operation with their national organization. The Tax Division of the national organization recognizes the necessity of bringing about as far as possible a uniformity of methods and administration of tax laws in the various states, and pursuant to the will of the industry as expressed at the Chicago convention is gathering information which will be of interest not only to state legislatures, but also to many operators. This information, together with the assistance of the Division, is at all times available to the industry.

OPEN PRICE ASSOCIATION WORK

CONCERNING the right to be informed as to stocks, supplies and market prices involved in the so-called Hardwood Lumber case, which is now awaiting decision by the Supreme Court of the United States upon an appeal from the decision of the United States District Court for the Western District of Tennessee, forbidding associations to give out information to their members and to the public concerning definite accomplished facts, we call especial attention to the resolution adopted by the Chicago convention asking for the creation of conditions which will permit business men to know the actual conditions in the markets through which their goods are to be disposed of.

Should the Supreme Court reverse the decision of the lower court in the Hardwood case the question will be thus solved. In case the lower court's conclusions are upheld by the Supreme Court, then there seems to be a real necessity for legislation which will permit business men to be advised of the existing facts which relate to their operations.

THE QUALITY OF EXPORT COAL

REPORTS to the Commerce Department emphasize the need of giving attention to a matter upon which the development of our export coal trade depends, that is, to the quality of the coal exported. It is known that some of the operators have given thought to grading and classification, and that they believe along with Secretary of Commerce Hoover that the time for taking definite action has arrived.

According to Commerce Department reports, American exporters have lost their supremacy in the Swedish markets through repeated deliveries of coal inferior to the samples upon which the sales were made. Whether breakage and pulverization was caused in transportation, or whether inferior grades were shipped by irresponsible in-and-outers whose intention was only to ship during a peak market, the effect has been the same, namely, considerable adverse publicity and a curtailment in the volume of orders for American coal.

Various means have been suggested for removing the cause of complaint. One is that the right of inspection before payment be granted; another, that reliable agents of American firms be appointed for the express purpose of regaining the confidence of their foreign customers which has been lost. Another is that the exporting concerns agree upon methods of grading and maintain a joint inspection bureau with authority to issue certificates of guarantee. The latter method is similar to the system followed by the grain exporters. It is not the purpose of this article to say what method should be adopted, but rather to call attention to the fact that the Department of Commerce has thrown out broad hints that unless the exporters themselves adopt a set of rules and regulations governing export shipments the government is liable to step in and do it for them. Of all things conceivable, this would be the most undesirable, for if there is anything the coal industry does not want, and does not need, it is more government regulation.

At the recent conference between Secretary Hoover and mining operators, appointment of a committee was authorized, charged with the duty of looking into the ocean freight situation. Operators who oppose further government meddling in their business should, and undoubtedly will, give to the committee the fullest possible measure of support and co-operation.

THE WAY OF THE WEST

NOT THE BIGGEST in point of attendance, but the equal of any in importance and in the amount of attention it attracted, was the Shale Section of the twenty-fourth annual convention of the American Mining Congress in Chicago. And not only the meetings, but the shale exhibits of the United States Bureau of Mines and various western states aroused the interest both of scientists and laymen.

Following adjournment of the convention some newspaper printed an editorial entitled, "Gas," which has since been reproduced in scores of other papers, and which said:

> "The use of automobiles is increasing 170 percent a year, while production of crude oil, from which gasoline is made, is increasing only 10 percent a year.
>
> "These figures caused knitted brows at the American Mining Congress in Chicago. They become of interest to you only when you take pencil and paper and try to figure out when gasoline will go to $1 a gallon.
>
> "Probably never, say geologists. Oil wells are giving out. Enough oil, however, lies in western shale rock to supply the world for centuries. Right now it costs too much to extract by distillation. But a way will be found."

It is an exaggeration to say that figures concerning the increased use of automobiles and gasoline caused knitted brows at Chicago. The crux of the article quoted, and the thought which makes it worthy of additional circulation, is contained in the sentence, "Enough oil lies in western shale rock to supply the world for centuries," and in the prediction, "A way will be found." If the shale men who traveled to Chicago had done nothing else than impress these two facts upon the nation at large, they would have more than justified the time and expense of their journey.

To say that enough oil lies in western shale to supply the world for centuries is equivalent to saying that the world will assuredly be supplied, for "a way will be found." The west always finds a way, if there is a way—and if there is no way the west will make one.

LAWS AND LAWS

MODERN DEMOCRACY, in so far as it is exemplified in this United States, seems to have gone mad with legislative hysteria. Whatever else happens, the legislative machinery of the state and federal governments can be counted upon to grind out about 25,000 new bills every year. Members of the various state legislatures and of Congress would be considered derelict in their duty if they failed to introduce new bills and secure the passage of at least a reasonable percentage of those introduced. They accumulate rapidly. Each state adds a few hundred statutes annually to those already on hand. No attempt is made to repeal or modify any that are onerous or obsolete. And Congress, not to be outdone by state legislatures, still holds the lead.

It has been estimated that our forty-eight states and Congress together are responsible for more than 10,000 laws annually, and this must be a conservative estimate. But when they are enacted who of us can obey them all? The legislators who pass them are seldom certain as to their meaning. Courts are disagreed as to their intent and purpose. Lawyers are confused in their interpretation. What chance is there under the circumstances for the average layman? If he violates some law because of the fact that he has been uhable to keep track of all the new measures that have been passed to regulate his conduct, he is told that ignorance of the law is no excuse. He is presumed to know the law. It is a miracle how we are protected from one another by multitudinous and intri-

cate statutes, and it is a super-miracle that the average citizen manages to avoid litigation, and, by some hook or crook, keep within the law.

During our impressionable and plastic years we are taught that democracy is peculiarly adapted to the making of laws which will safeguard and promote the interests of the people. We are told that "We, the people of the United States, in order to form a more perfect union, establish justice, insure domestic tranquillity, and promote the general welfare," will show great caution in the adoption of new laws that may interfere with our liberties. No less eminent authority than the great Blackstone held such a view concerning democracies. But, as a matter of fact, the contrary has proved to be the case. Either the people themselves or their duly elected representatives in the state legislatures and Congress have shown an unusual willingness in recent years to interfere with the rights and liberties of the people. Not only is this true, but we are confronted with another problem, which is that of combatting the tendency of certain groups, representing only a small fraction of the people, to impose their narrowed policies upon the majority. This tendency has been unusually apparent during the consideration of the new federal revenue law, but pressure is being exerted upon every other measure pending before Congress. In the various states it is disclosed in the policy of controlling political groups to penalize other classes and groups who find themselves defenseless.

It is too easy to make and unmake laws. There is danger that people will lose their respect for the "majesty of the law," and make no pretense of compliance with its complexities. Thus our social fabric may be seriously jeopardized. Agitation for additional laws which seek to regulate every human action from the cradle to the grave should be replaced by a campaign for the re-establishment of the rule of common sense.

HIGH TARIFFS AND HIGH PRICES

A CONSPICUOUS FALLACY is the doctrine that a protective tariff always increases the cost of living. Opponents of protection invariably say that it does, hoping thereby to defeat it, while some of the friends of protection give assent to the assertion but make the point that the public is better able to pay high prices under protection than low prices under free trade. Both are wrong, the former altogether and the latter partly.

High tariffs and high prices do not always go together. The one does not necessarily produce the other. As a matter of fact, a protective tariff on raw materials seldom, if ever, results in sustained increased prices for manufactured products. Its natural effect is to stabilize costs and thereby enable manufacturers to turn out lower priced commodities than would be possible without protection.

In an unprotected market the prices of all commodities are affected by economic conditions the world over, the result being a wide range of fluctuation with prices ranging from unreasonable peaks to distressing lows. Manufacturers confronted with such choatic conditions are driven by self-protection to base their selling prices upon the highest probable cost of their raw materials. In such circumstances the consumer pays top prices.

But a protective tariff, by governing the volume of importation and stimulating the maximum domestic production, insures a steady supply of raw materials for American factories at prices practically stationary the year around. Having fewer and lower apexes to deal with, the manufacturer can with greater certainty compute his costs, and it follows as a natural sequence that his selling prices can inevitably be lower, as it is not necessary to keep the safety margin so wide between material costs and sale price.

If those who oppose protection will take the time and trouble to reason about it they will realize, whether they admit it or not, that protection of American raw materials will stabilize prices, and that the law of supply and demand can be depended upon to keep the stabilized level on a reasonable plane.

THE WEIGHT OF THE INDUSTRY

THE NAIL WAS HIT squarely on the head when Secretary Hoover on November 14 told the conference of operators to get the weight of the whole mining industry behind any recommendations that might be made by the metals, coal and oil committees. The Secretary stated he had asked the American Mining Congress to appoint the conference committee because he felt that this "broad basis" should be given to its work, and the inference was emphatic that one organization could accomplish results many times greater than the sum of the achievements of numerous smaller bodies.

Mr. Hoover is a shrewd man, of great experience and observant to the n'th degree. He can speak of his own knowledge of international affairs in general and of the commercial situation and the mining business in particular. He knows the value of unity in action. It was he who caused America and her allies to handle their food problems, undoubtedly among the most critical the war brought forth, upon the "broad basis" of one strong body representing all, and it was he who demonstrated since the war that only one international relief agency operating upon this same broad basis could save a large part of Europe from starvation. In commending unity of action to the mining industry he is but advising the operators to do what his experience and observation teach is a condition precedent to success.

The Twentieth Century is a period of large organizations, comprehensive planning and big results. Everything is done on a broad basis. Representatives of segregated interests, important as those interests may be to those immediately involved, find themselves sitting in the ante-room while the agent of consolidated movements passes straight into the main office. The man with a complete program, backed by the weight of an industry and built upon the broad basis of consideration for collateral and competitive as well as associated interests, is the only man who can always secure an immediate hearing and respectful consideration.

What basis could be broader than the welfare of the mining industry, extending over three-fourths of the states and territories? What support could be weightier than that of the persons and firms who employ a million and a quarter men, furnish more than half the railway tonnage and pay the largest comparative proportion of state and federal taxes? The mining business and the nation's combined business are so inter-dependent that the curve of prosperity of the one coincides with that of the other. The support of its leaders for any program is a guarantee of that program's righteousness and of its political and economic soundness. Such an influence should not be dissipated by fractional utilization, but, as Secretary Hoover said, maintained on the broad basis of entirety and applied with its whole weight to those problems upon the settlement of which the well-being of the world depends.

OPERATORS' CO-OPERATING COMMITTEE CONFERS WITH HOOVER

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A. L. Beaty, *Texas Company.*	Edgar Z. Wallower, *Zinc.*	E. W. Parker, *Anthracite Bureau of Information.*
H. F. Sinclair, *Sinclair Oil Co.*	B. B. Thayer, *Copper.*	Albert Nason, *Nason Coal Co.*
Walter Teagle, *Standard Oil Co. of N. J.*	J. G. Bradley, *Chairman.*	J. G. Puterbaugh, *McAlester Fuel Co.*
	J. F. Callbreath, *Secretary.*	S. D. Warriner, *Lehigh Coal & Navigation Co.*

THE ABOVE committee called on Secretary of Commerce Hoover on November 14 in response to a request delivered in his behalf at the Chicago convention of the American Mining Congress. Secretary Hoover in his request had stated:

"It is the keen desire of the Department that it should be brought into closest relationship for co-operation with the industry, and it seeks the appointment of a committee from your Congress which will co-operate with the Department."

There were present during the conference with Secretary Hoover all members of the committee except Messrs. Sinclair, Teagle and Warriner, and, in addition thereto, Dr. E. W. Parker, secretary of the Anthracite Bureau of Information, Philadelphia, who represented Mr. Warriner; J. D. Zook, of the Nakomis Coal Company, Chicago; the heads of all departments of the American Mining Congress, and H. C. Morris, chief of the Fuel Division of the Bureau of Foreign and Domestic Commerce.

Before calling upon Secretary Hoover, the committee held a lengthy conference in the office of the American Mining Congress, at which time J. G. Bradley was elected chairman and Mr. Callbreath, secretary. Chairman Bradley is one of the best known coal operators, and at the present time is president of the National Coal Association, in which organization he has held official responsibilities practically since its inception. At the first conference the question arose as to whether the committee should be prepared to present any definite suggestions to Mr. Hoover, and the decision was reached that inasmuch as the Secretary had requested the appointment of a committee he undoubtedly had some particular subject in mind and the committee should therefore call upon him and offer its assistance and co-operation, but make no suggestion unless he called for suggestions. Accordingly, at the conference with Mr. Hoover, which began at 4 o'clock in the afternoon, Chairman Bradley opened the meeting by telling the Secretary that the committee, representing different phases of the mining industry, had come to offer its services in any capacity and to co-operate in every way.

J. G. BRADLEY

Chairman of the Mining Congress committee, appointed at the request of Secretary Hoover, to co-operate with the Department of Commerce. Mr. Bradley is president of the Elk River Coal & Lumber Company and president of the National Coal Association

Numerous problems confronting the mining industry were discussed, among them being the invasion of American oil fields by foreign capital, restrictions placed upon American investments in foreign countries, the export business as related to both metals and coal, ocean freight rates and the Seaman's Law, the exchange situation, and the general problem of government regulation.

Mr. Hoover spoke mainly upon export problems, particularly coal, emphasizing that American exportations were continually falling off and that the Department of Commerce was greatly exercised about the matter and wanted to be of assistance in bringing about a change. Mr. Bradley stated that the National Coal Association had a committee, of which Mr. Watkins was chairman, which was functioning on behalf of the coal industry in this respect. Mr. Watkins announced that he would have to confer with members of this committee before making definite commitments in behalf of the coal industry.

At the suggestion of Secretary Hoover, the conference committee will consider at once the question of the application of the Seaman's Law. It is believed by Mr. Hoover that the shippers and ship owners can suggest certain changes in the measure which will be acceptable to Congress, in that they will promote export business and the use of American bottoms without in any way vitiating the most commendable features of the Seaman's Law. Messrs. Bulkeley Wells and B. B. Thayer, representing metals; T. H. Watkins, representing coal, and George S. Davidson, representing oil, were appointed to confer with other operators and appoint additional members of a committee to conduct investigations and make suggestions along this line. It was definitely agreed upon that this committee will consult with the American Steamship Owners Association, and that both Mr. Hoover, and the committee would enlist the co-operation of exporters of agricultural and other products.

OUR VANISHING GOLD PRODUCTION

By H. N. Lawrie
Economist, American Mining Congress

THE gold production of the world has declined from $469,000,000 in 1915 to $338,000,000 in 1920, a decrease of $131,000,000, or 28 percent, while that of the United States has declined from $101,000,000 to $51,000,000, a decrease of $50,000,000, or 49 percent. Of the total decline in the world's production during this period the United States has contributed 38 percent, although its normal quota to the gold production of the world has been about 21 percent.

In 1915 the United States produced 21.5 percent of the world's output of gold, while in 1920 it produced but 15.1 percent. In the former year the gold production of the British Empire was 63 percent of the total, while in the latter it had risen to nearly 70 percent.

The decline in the gold production of the world excluding that of this country from 1915 to 1920 was 22 percent, while that of the United States was 49 percent, or more than double.

Had the world's gold production for the year 1915 been maintained up to and including 1920, a larger production by $383,000,000 would have been recorded, or more than the total production for 1920. Had the gold production of the United States for the year 1915 been maintained up to and including 1920, a larger production by $149,000,000 would have been recorded. Due to the failure of this country to maintain its 1915 production it has contributed 40 percent to the failure of the world to maintain its 1915 production.

Gold Production

	World	United States	% U. S. to World
1915	$468,724,918	$101,035,700	21.5
1916	445,176,500	92,590,300	20.4
1917	419,422,100	83,750,700	20.0
1918	383,605,552	68,646,700	17.9
1919	365,166,077	60,333,400	16.5
1920	338,000,000*	51,186,900	15.1

* Estimated.

The principal reason for this extensive decline in gold production throughout the world has been the increased cost of labor and material since 1915 as against a fixed price for gold. There has been a factor, however, in all countries outside of the United States which has in a large measure compensated for these increased costs since 1919. The standard price of gold in London has been 85 shillings per fine ounce. But sterling exchange having become depreciated in terms of the gold standard, newly produced gold sold in the London market at auction averaged, during 1920, approximately 113 shillings per ounce, or a premium of about 33 percent. The British government in July 1919 permitted the export of newly produced gold from its possessions under a license, and since that time the gold producers of the Empire have been receiving an exchange premium. It will be noted from the table of declines that the decline of the world's production for 1919 was about half of that of 1918, which indicates the benefit of this premium.

In the United States, however, nothing has been done to in any way compensate for the increased cost of production, which accounts for the above facts which show to what extent the gold production of the United States has declined in excess of that of the remainder of the world. This is not a condition which can be pointed to with any degree of American pride when one considers the position of the United States as the creditor nation of the world. It seems all the more deplorable that the government should have been so negligent since the maintenance of the gold standard depends on the ability of the world to produce gold in which the United States should contribute its quota.

It is evident that a mere shifting of the position of gold that has been formerly employed in national monetary reserves is contributing nothing to expand the base upon which the entire credit and currency structure of the world has been created. The financial authorities of this nation are little concerned over this serious situation as they seem to regard the gold which we have acquired during and since the war as a fixed addition to the prewar gold reserve of this country. No consideration has been given to the fact that the loss of this gold to the reserves of foreign nations has had a marked effect in depreciating their currencies and therefore their purchasing power in this market. If the purchasing power of the remainder of the world is to increase to the prewar normal when currencies were at par, this gold must inevitably be returned to the gold reserves of such nations. Failing to do this, our export trade will continue to decline with its serious consequences upon the prosperity of the country.

The gold production of the world this year probably will not exceed $320,000,000, while the United States will probably not produce more than $42,000,000. Numerically more than 75 percent of the properties which produced gold in this country in 1915 have been closed down, allowed to fill with water, and expensive surface equipment to disintegrate. The gold producing power of the nation has been seriously crippled and with a continued "watchful-waiting" policy by the government still more serious results will be sustained by the industry. As a matter of national pride as well as a matter of necessity the government should remedy this situation if it is desirable to maintain the gold producing power of the nation on a level with the remainder of the world and to sustain the gold standard as the basis of all credit and currency transactions.

Annual Declines In Gold Production

	World	Percent	United States	Percent	World Excluding United States	Percent	Percent U. S. of World's Decline
1915–16	$14,548,418	3.1	$8,445,400	8.3	$6,103,018	1.7	58.0
1916–17	34,754,400	7.7	8,839,600	9.5	25,914,800	7.2	25.4
1917–18	35,816,548	8.5	15,104,000	18.0	20,712,548	6.2	42.5
1918–19	18,439,475	4.8	8,313,300	12.1	10,126,175	3.2	45.1
1919–20	27,166,077	7.4	9,146,500	15.1	18,019,577	5.9	33.7
1915–20	$130,724,918	27.9	$49,848,800	49.3	$80,876,118	22.0	38.1

WADLEIGH HEADS COAL SECTION AND FUEL PURCHASING COMMITTEE

F. R. WADLEIGH, head of the coal section of the fuel division of the Bureau of Foreign and Domestic Commerce, is a man of very wide experience, not only in all branches of the coal industry but in all practical uses of coal. That this experience will be utilized to the full is seen in the fact that arrangements have been made for Mr. Wadleigh to act also as consulting engineer to the Bureau of Mines on coal classification, commercial sampling and analysis, coal purchase and specifications, coal storage problems and other matters combining commercial and technical problems.

Mr. Wadleigh is a graduate of Princeton University. He has been both a railway employe and a locomotive fireman as well as fuel inspector and road foreman. He has had charge of engineering work, including inspection of coal and mines in South America, the West Indies and in foreign countries, particularly in connecnection with the exportation of Pocahontas coal. Before he began private practice as a consulting engineer, Mr. Wadleigh was assistant general manager of a large coal and coke company, in charge of all engineering and technical work, including coal preparation and mine examinations. The duties of this position required his spending several months in European and South American countries investigating export markets and prospecting for coal on the west coast of South America.

F. R. WADLEIGH

Head of the Coal Section of the Fuel Division of the Bureau of Foreign and Domestic Commerce, and chairman of the Coal Committee of the Federal Purchase Board. This committee will supervise the purchase of nine million tons annually.

Member of Many Organizations

In 1913 Mr. Wadleigh began private practice as a consulting engineer. His work has since included investigations of export markets in Europe; valuation of coal properties in West Virginia, Alabama and Kentucky, and an extended investigation of eastern coal fields. At the time of his selection as a Department of Commerce official, he was assistant to the president of a New York corporation actively engaged in the exportation of coal and mine operation.

During the war Mr. Wadleigh was a member of the Central Bureau of Planning and Statistics staff and was the author of several reports for the Shipping Board, including one of 500 pages with maps of the world's steamship bunkering trade. He has been a frequent contributor to the technical and trade press, and for two years was a member of the editorial staff of Coal Age. He is a member of the American Mining Congress, and likewise of the following organizations: American Institute of Mining & Metallurgical Engineres, American Society for Testing Materials (Member of Coal Specifications Committee), Franklin Institute (Member of Science and Arts Committee), American Chemical Society, American Electrochemical Society, Coal Mining Institute of America, Royal Society of Arts, London, International Railway Fuel Association, American Association for Advancement of Science, Princeton Engineering Association, American Geographical Society, American Museum of National History, Academy of Political Science, New York Zoological Society, Engineers Club of Philadelphia, Pan-American Society of U. S.

Heads Federal Purchase Board

Upon the organization of the Federal Purchase Board, which will operate under the Budget Bureau and supervise the purchase of coal and fuel oil for the government, Mr. Wadleigh was elected chairman of the coal committee, and a member of the fuel committee. The Interior Department asked for his selection on the coal committee because of his association with the Bureau of Mines in coal investigations. Official representatives of the Interior Department on the purchasing board are F. J. Bailey, assistant to the director of the Bureau of Mines, and A. E. Ambrose, petroleum technologist of the same bureau.

Large consumers will find it profitable to familiarize themselves with the data which will be contained in a report to be submitted by the coal committee of the Purchasing Board before January 1. This data will be the basis used by all government departments in placing orders for their coal supplies. The coal committee has conferred with operators and dealers in an effort to obtain a comprehensive view of the details in meeting the government's needs, including forms of contract and time and place of making purchases.

The Federal Purchasing Board's regulations will cover annual purchases of approximately 9,000,000 tons, two-thirds of which are anthracite. Among the largest federal users of bituminous are the navy, 2,500,000 tons; the army, 2,000,000 tons; Shipping Board, 2,000,000 tons, and various government buildings in the District of Columbia, 250,000 tons. The Treasury and Justice departments are also heavy users of bituminous.

The Navy Department has requested Congress to appropriate $12,500,000 additional for coal and other fuel for ships during the remainder of the year. It is estimated that the operating plans of the navy require the expenditure of $30,000,000 for the navy's fuel this year, but Congress appropriated only $17,500,000. Navy officials hold that unless the additional sum requested is allowed fleet operations will be materially curtailed.

THE ARMY GAS MASK cannot be relied upon for protection against the gases and foul atmosphere of mines. Official announcement to this effect has been made by the United States Bureau of Mines. The statement also says that the army gas mask is not as dependable in fire fighting and in ordinary commercial usage as it is upon the battlefield.

DECREASE IN MINE ACCIDENTS

FATALITIES in the mines were fewer in 1920 than in 1919. A complete report of both fatalities and accidents has been published by the United States Bureau of Mines, several months in advance of the usual date. It is the intention of the bureau, however, to make even a better speed record next year.

During the year 1920 there were 2,973 deaths and 206,000 injuries in the mines, quarries, coke ovens and metallurgical plants of the United States. These figures include all mines and mining plants with the single exception of iron blast furnaces. The number of men employed in these districts during 1920 was 1,088,000 who worked a total of 279,400,000 shifts, or an average of 257 working days per man. Accidents, based upon the rate of 300 working days, resulted in 3.19 deaths and 221.25 injuries per 1,000 employes. During 1919 the death rate was 3.63 per 1,000, and the injury rate 219.33 per 1,000.

In the various branches of the mining industry there were both increases and decrease in the number of men employed as compared with the number employed during the preceding year. Coal mining, for instance, employed 4,000 more and copper mining 4,000 less; iron mining employed 1,700 fewer men and the gold and silver mines 2,200 less. There was likewise a loss of 1,300 men in the lead, zinc and fluorspar mines in the Mississippi Valley states; also a loss of 4,200 at metallurgical plants and 600 at coke ovens. The payrolls of the quarries of the country, however, were augmented by the names of 11,000 new employes.

All employes worked a greater number of days in 1920 than in 1919. Metal mine employes gained an average of 15 days per man; quarrymen 14 days; workers in beehive coke ovens gained 32 days per man; those in by-product ovens 18 days. Each of the 780,000 men employed in the coal mines worked 32 more days last year than they did in 1919.

The Bureau of Mines in preparing its annual report compares the number of men injured to the population of a large city, and draws an object lesson therefrom in stating that while the number involved may seem large, it is in reality small as compared with the number which were injured in former years. The Bureau states:

"To visualize the number of men injured," the report says: "In the mining and metallurgical industries during the past year, it may be stated that it is roughly equal to half of all the men, women, and children in the city of Washington, the nation's capital. Large as the number seems, however, it is being almost annually reduced through the unremitting efforts of various agencies seeking to make the mines a safer place in which to work. These agencies include not only the United States Bureau of Mines and the various state mining departments, but also many mining companies that, at their own expense, maintain well equipped safety organizations among their employes. In addition, there are numerous miners' organizations co-operating in the common effort to increase mine safety."

The detailed report for the year is shown in the table on the next page.

INJURY RATE IN LEAD, ZINC AND FLUORSPAR INDUSTRIES

ACCIDENTS in the lead, zinc and fluorspar mines of the Mississippi Valley States in 1920 resulted in 36 deaths and 3,607 injuries, Bureau of Mines' statistics. The fatality rate based upon 300 working days was 3.27 per 1,000 and the injury rate 327.97.

There were 11,638 employes who worked an average of 283 shifts. The loss in the number of employes was 1,330. There was, however, a gain of about 1 percent in the total number of shifts worked and an increase of 31 in the number of working days per man. The fatality rate shows a reduction of .86 per 1,000, but the injury rate for 1920 shows an increase of 35.69 per 1000.

Of the fatalities last year, 26 occurred underground, 7 in shafts and 3 in surface shops and yards. Of the 3,607 injuries, 3,022 were underground, 201 in shafts, and 384 on the surface. The principal causes of the nonfatal accidents underground were: loading rock or ore at working face 852, haulage 442, fall of rock from roof or wall 369, drilling 289, trimber or hand tools 81, stepping on nails 81, machinery 80, falling down chutes, raises etc. 47, explosives 37, run of ore from chute or pocket 24, and suffocation from natural gases 13. Among shaft accidents, 76 were caused by objects falling down shafts, 76 by skip or cage, 14 by persons falling down shafts, and 2 by overwinding. Surface accidents resulted from the following: machinery 67, hand tools 50, stepping on nails 45, falls of persons 31, from mine cars, locomotives, or aerial trams 16.

In the total number of workers injured, Oklahoma led the list with 1614, followed by Missouri with 742, Tennessee 468, Kansas 373, Wisconsin 292, and Illinois 95.

TWO CENTRAL STATES TIED IN MINE RESCUE CONTEST RECORD

PENNSYLVANIA and Illinois have sent competing teams to all of the International Mine Rescue and Safety Meets held under the auspices of the United States Bureau of Mines since 1914. Five of such meets have been held, namely: Terre Haute, 1914, San Francisco, 1915, Pittsburgh, 1919, Denver, 1920, St. Louis, 1921.

There were eleven mine rescue teams at Terre Haute and fifteen at San Francisco; twenty-one at Pittsburgh; seventeen at Denver and fourteen at St. Louis. There were twenty-nine first aid teams at Terre Haute; twenty-six at San Francisco; eighty-four at Pittsburgh; sixty-eight at Denver and fifty-eight at St. Louis.

F. J. Bailey, Assistant to the Director of the Bureau of Mines, is the official in charge of mine rescue and safety work for the United States. Mr. Bailey has prepared the following summary and comments of and upon the meets which have already been held:

"Pennsylvania and Illinois have the distinction of having sent competing teams to all five of the mine-safety demonstrations held since 1914.

"Pennsylvania has led all other States in the total number of teams participating in the past five meets. To these meets, Pennsylvania has sent 87 teams, followed by Indiana with 57, Illinois 46, Colorado 29, West Virginia 14, and California 11.

"For sending the largest number of teams to participate in a contest held in another state Illinois takes first place. Forty-six teams have represented Illinois at meets held outside of Illinois' borders. In this respect Indiana ranks second, with 25 teams, Pennsylvania third with 19 teams, and West Virginia fourth with 14 teams.

"The holding of the meets in different cities for the convenience of the various mining sections of the country, operates, of course, to prevent the attendance of some teams from distant States because of large transportation costs, yet there are nine companies or miners' organizations that have sent teams to each of the last three meets,

and nineteen companies or organizations whose teams have participated in each of the last two contests.

"It has been suggested that a prize cup be awarded at the next international meet to the team with the highest score in the last three meets."

METAL MINE ACCIDENTS

ACCIDENTS at mines producing gold, silver and miscellaneous metals resulted in 117 deaths and 5,704 injuries in 1920, Bureau of Mines reports.

States having the highest fatality rates for each thousand employes were: New York, 22.73; Washington, 12.30; Utah, 6.29; California, 5.83; Colorado, 5.35; and Arizona, 5.34. Those having the lowest fatality rates were: New Mexico, 1.34; South Dakota, 2.86; Idaho, 3.02; Alaska, 3.31; Nevada, 3.58; and Montana, 3.77.

The highest non-fatal injury rates were: 316.8 for Utah; 298.0, Idaho; 275.4, California; 266.7, South Dakota; 242.4, New York; 196.6, Montana; 157.7, Colorado; 134.4, Arizona; and 124.0, Nevada.

FEWER COAL MINE FATALITIES

ANOTHER REDUCTION in the coal mine fatality rate is shown in the statistics for August prepared by the Bureau of Mines. The official tabulations show that 141 men were killed in August, 1921, as compared with 203 in August, 1920. The decrease amounts to 62 fatalities, or practically 31 percent. The fatality rate was 3.34 per million tons produced as compared with 3.57 during August of 1920.

The average number of lives lost during August of each year from 1913 to 1920 has been 219, and the average August production for this period has been 52,209,000 tons. The fatality rate during this period has been 4.19 per million tons produced. The fatality rate for August of this year was, therefore, 62 percent below the average for eight years.

During the first eight months of 1921, 1,290 men have been killed in coal mine accidents as against 1,489 during the corresponding period of last year, the decrease being 199, or 13 percent. The output of coal for the same months was 322,060,000 tons during 1921 and 412,109,000 for 1920, the decrease this year being 21.9 percent. These figures represent a fatality rate of 4.01 per million tons mined in 1921 and 3.61 per million tons mined in 1920.

MINE ACCIDENT STATISTICS, 1920.

	Employes	Shifts	Days Active	Fatalities	Injuries (Disability 1 day or more)	Accident rate per 1000 300-day workers	
						Percent Killed	Percent Injured
COAL MINES(a)	780,000	188,000,000	241	2260	150,000	3.61	240.00
METAL MINES:							
Copper	35,254	11,182,119	317	128	12,047	3.43	323.20
Gold, silver, and misc. m. m.	29,933	8,354,830	279	117	5,704	4.20	204.82
Iron	45,990	13,574,788	295	106	9,072	2.34	200.49
Lead and zinc (Miss. Valley)	11,638	3,299,278	283	36	3,607	3.27	327.97
Nonmetallic minerals	13,768	3,950,878	287	38	2,132	2.89	161.88
TOTAL	136,583	40,361,893	296	425	32,562	3.16	242.02
QUARRIES:							
Cement rock	13,251	4,249,485	321	39	2,585	2.75	182.49
Granite	12,735	3,199,073	251	22	1,392	2.06	130.53
Limestone	43,151	11,154,653	259	96	5,321	2.58	143.11
Marble	4,438	1,304,552	294	4	400	.92	92.00
Sandstone and bluestone	4,466	1,062,161	238	2	356	.56	100.54
Slate	3,496	1,009,244	289	5	364	1.49	108.20
Traprock	4,951	1,147,480	232	10	799	2.61	208.89
TOTAL	86,488	23,126,648	267	178	11,217	2.31	145.51
COKE OVENS:							
Beehive	10,955	3,028,062	276	11	1,035	1.09	102.54
By-product	17,184	5,948,152	246	38	2,380	1.92	120.04
TOTAL	28,139	8,976,214	319	49	3,415	1.64	114.13
METALLURGICAL PLANTS:							
Ore-dressing plants	15,959	4,793,151	300	21	2,624	1.31	164.24
Smelters(b)	24,944	8,741,116	350	20	4,147	0.69	142.33
Auxiliary works	16,005	5,401,641	337	20	2,092	1.11	116.19
GRAND TOTAL, 1920	1,088,118	279,400,663	257	2973	206,057	3.19	221.25
GRAND TOTAL, 1919	1,087,197	250,297,399	230	3025	182,994	3.63	219.33

(a) Figures for coal mines are estimated, except for number of fatalities. Final data not yet available.

(b) Excluding iron blast furnaces.

SECRETARY FALL FAVORS "UNSHACKLING OF ALASKA"

FIFTY-SEVEN VARIETIES of bureaus cannot function in the best interests of Alaska, in the opinion of Secretary of the Interior Fall. President Harding, as well as Secretary Fall, is deeply concerned regarding the present and future welfare of Alaska, and it is the intention of both to "unshackle" that country from bureaucratic control.

During a recent trip to the west Secretary Fall in addresses and interviews announced the policy of President Harding. It was thought earlier in the year that President Harding and Secretary Fall would go to Alaska, but the peace conference intervened and prevented them from doing it. It is felt certain that President Harding and Secretary Fall will make a trip there next year.

In a recent interview Secretary Fall stated that the major objects of President Harding and his administration were to "unshackle Alaska from bureaucratic control and speed up reclamation of arid lands." The Secretary continued:

"There are three measures now under consideration to relieve Alaska of the burden of bureaucratic control: One of these is to give the president power to allocate control, and another provides for a commission form of territorial government. I have revoked a rule of my predecessor relating to the leasing of Alaskan oil lands, the rule of the former administration allowing a person to take up only a single claim of 2,500 acres, while present regulations allow as many as five claims, or nearly 13,000 acres per person. This more liberal regulation may assist in developing Alaska's oil fields.

"Little can be done with the northern territory until all Alaska departments and all authority to deal with Alaska is vested in a single branch of the government. Fifty-seven varieties of bureaus cannot function in the best interests of the territory. The laws pertaining to the national domain do not fit Alaska. The problems in that section of the country are peculiar to that section alone. Capital is what is needed. If it is available to open up the country to the miner he will see to it that he gets transportation for his ores. Moreover, the laws relating to the territory must be liberalized if Alaska is to be developed. Capital must be assisted by legislation. If the speculative element is too strong it will be difficult to get capital to go in. It is my present plan to have a practical railroad man make a survey of the Alaskan railroad situation and render a full report on it. I am interested in the territory's development and shall do all in my power to help it forward."

ALASKAN MINING CONDITIONS

IMPROVEMENT is noted in mining conditions in the Yukon valley, Alaska, according to reports received by the General Land Office from its Alaskan field division. Mining activity is noted at Mayo, on the Stewart River, and mining operations in the Forty-Mile district are also greater than last year. A new strike encouraged many old-timers to again take up prospecting. The gold output of the district is estimated at $225,000. Lack of transportation is said to prevent development of many gold and coal properties, although the Alaskan Railroad Commission is building a railroad from Fairbanks to Circle, which will open up large areas of low grade placer ground.

There has been some mining by small operators in the Rampart district. The Kantishna district has attracted attention of prospectors and several companies have installed equipment for placer mining for operations next year. A new silver-lead prospect has been found, indicating the presence of other lodes.

In the Tolovana district, 60 miles northwest from Fairbanks, many miners were unable to get water for sluicing and as a result the gold output has been small. A few weeks ago a new strike was made on Wilbur Creek, the ground giving $3 per pan, causing a small stampede and forecasting a great deal of work next year.

In the Fairbanks district only the higher grade placer ground was mined. Two dredges worked successfully in Fairbanks Creek. A number of small outfits were working in some oft he other creeks but the high transportation costs make it impossible for a miner to work any but the higher grade ground. Generally there is a low ebb in the mining industry in the Fairbanks district.

Mining in the Nome region has better prospects and conditions generally are somewhat improved. Five or six dredges have been operating and if pending negotiations are successful there will be one or two large dredges built next season.

The upper reaches of the Kuskokwim River are receiving more attention from lode and placer miners than any other district. A steamboat line was established on the river, two boats running from Bethel north. Two or three dredges were working and one company is developing a lode prospect on Nixon Fork. Many other new prospects are reported. The Alaska Road Commission will cut a trail from the Kantishna district by way of Lake Minchumina, which will shorten the distance from the railroad and provide a better winter route to the Kuskokwim Basin.

The prospective oil fields on the southern coast are attracting attention. Geologists and engineers representing some of the large oil interests have visited Cold Bay, Chitina Bay, Katalla and Yakataga Beach and are said to be favorably impressed with the possibilities. With the exception of two wells drilled on a patented claim near Katalla no work tending to develop oil has been done. In the Cold Bay field legal difficulties have arisen that are very embarrassing to those who would advance money to drill. The fault is largely with the leasing act which allows a qualified applicant to hold 2,560 acres merely by putting one stake in the ground. Prudence should make any one who thought he had a valuable claim put up four stakes to hold it but very few of them did, and the field is involved in endless conflicts. Another phase of the situation is presented when a company wants to make an agreement to drill on some of the existing permits. Many of the permittees want exorbitant sums for the right to drill and seem unwilling to meet the man with capital halfway. As a result it does not seem likely that any wells will be drilled next year in that field. These views are expressed in the Land Office report.

The Uakataga field will probably be prospected next summer and geologists think commercial quantities of petroleum will be encountered. The transportation question is very difficult and a large outlay of capital will be necessary to handle the oil after it is found. The only possible outlets are at Katalla, seventy-five miles west of the field, and Icy Bay, thirty miles to the east, neither affording shelter for boats.

The Land Office has had two surveying parties in the oil fields all summer, one in Cold Bay and one in Yakataga and future conflicts will be largely avoided.

Seepages have been reported near Anchorage and the country for miles around has been staked. A small seepage south of Anchorage did not expose the underlying strata. The oil seeps from a gravel bank. Many homesteaders are ready to offer final proof and unless the law is changed to permit acceptance of patents to the surface rights by entrymen these claims will be held up. There are many homesteaders on the lignite-bearing lands and along Kachemak Bay who cannot obtain patents. Some of them have been living on their claims for years hoping tbat Congress would pass such a law.

SECRETARY FALL FORESEES ECONOMIES IN ELECTRIFICATION

"THE NATION'S BUSINESS demands greater and cheaper production and better and cheaper transportation and the electrification of industries and railroads is the answer to that demand," is the conclusion reached in the Super-power Survey report which was submitted by Secretary Fall to President Harding on November 5. The Super-power Survey, as defined in the act of Congress authorizing it, is a "special investigation of the possible economy of fuel, labor and material resulting from the use in the Boston-Washington region of a comprehensive system for generating and distributing electricity to transportation lines and industries." Its main purpose is to devise means for saving fuel.

The report as submitted to the President states that until 1930 fifty million tons of coal can be saved annually by the unified operation system in the Boston-Washington industrial region. If the industries in this region are motorized, the report continues, the sum of $190,000,000 in money will also be saved annually.

The study of this region was facilitated greatly by an advisory board of business men, and by an engineering staff headed by W. S. Murray of New York. Secretary Fall has requested the board of business men to continue their public service in the further consideration of the legal and financial aspects of the Super-power project. Only the engineering features of the project are presented in the report which Secretary Fall has delivered to the President.

Secretary Fall's analysis of the report includes the following:

> Economy of investment and economy of operation are the two ends sought by this plan, the outstanding feature of which is a great network of inter-connecting transmission lines which makes a system out of many units. "In interconnection is superpower" is the new version of an old adage, and here interconnection will mean 970 miles of 220,000-volt lines and five times that mileage of 110,000-volt lines. With these major lines, the 1,200 miles of lines now operated at 33,000 volts or more will become simply distribution lines for the local public utilities. This transmission network and its substations would require $104,000,000 by 1930, and the total investment cost of the system the same year is given by the engineers as $1,109,564,000 of which $693,218,000 would be new money, for more than $400,000,000 worth of existing steam-electric and hydro-electric plants are retained in service.

The thirty-five pages of the report devoted to the proposed electrification of the heavy-traction railroads presents results of even more general interest than the detailed analysis of the industrial use of electric power. The question of railroad electrification must be decided according to density of traffic, and so it is that of the 36,000 miles of main line, yards, and sidings in this super-power zone, only about 19,000 miles could be profitably electrified. This electrification would cost nearly a half billion dollars, but it would save from 11 to 19 percent on the investment, or an average of 14 percent, according to the report. Electrification is the next step in railroad expansion absolutely necessary to increase both the capacity and the efficiency of our transportation system. Incidentally, the annual saving of 9,000,000 tons of coal by the railroads would greatly increase the available car supply. The report figures no returns resulting from the abolition of the smoke, cinders, and noise of the steam locomotives, but the ordinary citizen will find some comfort in the abatement of these nuisances.

Secretary Fall's opinion of electrification as contemplated under the Super-power Survey was expressed in the following words written to the President:

> "I believe the engineering facts and economic conclusions here presented will command the attention alike of the financiers, railroad executives, public utility officials, industrial leaders, and others of that large group of our citizens of large vision who are building for the America of tomorrow. Our present-day achievements have largely come through our country's unparalleled wealth in raw materials. The larger use of our sources of energy must be planned with every effort to avoid waste. Had the superpower project outlined in this report been in operation in 1919 it is believed that twenty-five million tons of coal could have been saved, and with the rapid growth expected in the present decade the saving possible in 1930 by the interconnected electrification of industries and railroads would be fifty million tons.
>
> "However, these economies on a truly national scale will affect not only coal but capital expenditures as well, and especially the output of human energy. More and cheaper electricity must surely add to the comfort and prosperity of our citizens, and this report on a superpower system is submitted as a contribution of the Department of the Interior to the common welfare."

COAL STORAGE PROBLEMS

EXPERTS studying the fuel problems connected with the proposed Super-power project are of the opinion that a power plant using 1,260,000 tons of bituminous annually might store a six months' supply with practicality. Admitting that storage of this amount might appear to be excessive, they point out a number of advantages as offsetting the increased handling and space required.

Among the chief of these is the claim that it would effect a partial stabilization of the mining and the transportation industries through bringing about a more uniform demand for fuel and thus tending to increase the operating load factor of these two industries. This is held forth as being a long step toward reduction of the price of fuel to the consumer because of the economies which it would bring in mining and transportation costs. Another advantage claimed is the opportunity which would be offered consumers to purchase coal at the lowest market price. It is claimed that the ability to avoid having to go out into the open market and pay spot prices for coal in times of scarcity would more than offset the cost of adequate storage facilities. Emphasis is also laid upon the benefits which would be derived through insurance against interruption of service due to lack of coal.

OCTOBER ANTHRACITE

Anthracite shipments for October totaled 5,872,753, tons, an increase of 353,371 tons over September. There was a decrease, however, of 368,118 tons as compared with October of last year. October of this year produced fairly average shipments, however, when it is considered that several mines in the Scranton district were prevented from operating by the Kohler act. Shipments since April 1 amounted on November 1 to 40,228,367 tons, an increase of 502,713 tons over the corresponding period of 1920.

DR. BAIN TALKS ON HARDING'S LETTER TO MINING CONGRESS

IT IS ENTIRELY PRACTICABLE to store coal, in the opinion of Dr. H. Foster Bain, director of the United States Bureau of Mines. Following the sending of a letter by President Harding to the American Mining Congress convention anent recurring coal troubles, Dr. Bain gave out an interview to the effect that seasonal demand, intermittent employment and storage, all of which were touched upon by the President, presented no mysterious or unsolvable technical or mechanical questions.

The request of President Harding, published in the November issue of the Mining Congress Journal, is being given careful consideration by the American Mining Congress. Dr. Bain's statement upon the questions involved follows:

"The adoption of a general policy which would provide reservoirs of bituminous coal to be drawn upon in times of great demand or of low production is entirely a commercial question," continues Dr. Bain. "If the producer, or the dealer, or the large consumer, could produce or buy coal in the spring or summer for a price low enough to justify the cost of putting coal in storage and its rehandling, minus a fair insurance rate that he would be guaranteed a continuous supply in time of need, storage would become common.

"This lower seasonal price of coal could be brought about by concessions on the part of the miner, the mine operator, and the railroads. For the sake of obtaining more regular employment, the miner might accept a lower wage or rate in certain seasons of the year, although this is doubtful; but the mine operator might accept less profit during the same periods in order to keep up his production. Steady and regular mine operation at capacity production always means lower production costs, as compared with intermittent operation and lessened production. Overhead expenses—taxes, interest, management, together with the expense of keeping the mine in proper working condition—all go on, whether production is light, heavy, or has entirely stopped. The railroads could assist by accepting a lower freight rate on coal moved in the spring and summer.

"The small individual consumer, especially in the cities, often has inadequate storage space. Storage at the mine may allow a steady working-day in time of shortage of cars but will not ensure steady seasonal operation. Again, large scale storage at the mines does not do away with the difficulty of transportation often experienced to the points of consumption. Moreover, a great many mines are in a hilly or mountainous country, where but little, if any, space is available for large storage capacities. The proper place, therefore, for storage on a large scale is at or near points of consumption.

"This latter kind of storage involves the use of a large plot of ground, as coal stored 10 feet high allows slightly less than 10,000 tons storage per acre. The purchase and installation of mechanical coal handling devices and systems would also be necessary. There are in existence numbers of American engineering and machinery concerns who have successfully designed and built many coal storage systems for public utilities and other corporations which at present store considerable quantities of coal. In addition, there should be a fuel engineer in charge who has a practical and technical knowledge of the way in which different kinds and sizes of bituminous coal will probably act in storage, and who knows the engineering features vital to the economical handling of coal. These three factors are today easily obtainable in the United States; their purchase and employment involve large capital expenditures on which an adequate return must reasonably be expected.

"When, at such a projected storage plant or yard, coal can be purchased at a delivered price sufficiently low to secure a fair return on the investment, after adding the operating costs of storage and rehandling, then coal storage yards will become established near all of the points of heavy consumption and the present seasonal variations will be largely avoided.

"There are no mysterious or unsolvable technical or mechanical questions that block the way to the adoption of a general policy of storing bituminous coal, in either large or small quantities."

COAL STRIKE MAY FOLLOW DECISION ON CHECK-OFF INJUNCTION

DANGER of an immediate coal strike, or general "vacation," again threatens, in the opinion of operators who attended the hearing before the U. S. Circuit Court of Appeals of the so-called "check-off injunction case," which originated in the court of Judge Anderson, of Indiana.

Judge Anderson, it will be remembered, issued an injunction which, among other things, restrained operators from observing the check-off provisions of their contracts with the United Mine Workers, and many miners immediately went on strike. The Circuit Court of Appeals modified the injunction in respect to the check-off, thus restoring its operation. At the Chicago hearing on November 16 the operators asked that this modification be vacated and that Judge Anderson's injunction be re-instated. The Court of Appeals is expected to give its decision any day, and those who heard the arguments are of the opinion that the injunction will be re-instated. There will then either be a strike, in which the mine workmen will flaunt the law and the courts, or a back-down on the part of the union.

PROCESS FUEL STUDIES

IN CONSIDERING the possible use of process fuels and pulverized coal for consumption in large steam-electric plants, engineers working on the Super-power project applied their studies to the four processes which have already proven of commercial utility. Four sources of process fuels presented themselves for investigation: by-product coke-oven plants furnishing coke; by-product coke-oven plants furnishing gas; low temperature distillation plants furnishing semicarbocoal; and bituminous gas producers furnishing gas. With the exception of gas from by-product coke-oven plants, process fuel is shown to cost more than coal. Moreover, the heavy investment required for a coke-oven plant producing gas as a process fuel, combined with the transportation difficulties in distributing the by-products, makes its use as a process fuel impracticable. The coke produced by one such plant would amount to 26 percent of the entire amount of coke now used by the super-power district, embracing territory between Washington and Boston.

Pulverized coal has been successfully used in cement kilns and metallurgic furnaces for some time, according to the report submitted by experts making a special study of this problem in connection with the project, but it has been only in recent years that enough progress has been made to warrant its serious consideration. It is stated that no large power plants have used this form of fuel long enough to give a reliable indication of the results.

SOME ANTHRACITE FACTS AND PROBLEMS

By Edward W. Parker

THE ENTIRE PRODUCTION of anthracite comes from an area containing less than 500 square miles in the northeastern part of Pennsylvania. This represents only about 1/10 of 1 percent of the bituminous coal fields of the country, which are scattered over some thirty different states. From this small area of less than 500 square miles there has been produced in the century of anthracite mining a total of 2,750,000,000 gross tons, or 22 percent of the aggregate output of anthracite and bituminous coal in the United States. The annual production of anthracite exceeds the total production of coal in any other country except Great Britain and Germany. But it has reached its limit. The anthracite mines, unlike the bituminous mines, can no longer respond to the increasing demands of an augmenting population, but on the other hand are faced with the problem that the time is not far distant, a few decades at most, when the inevitable period of decline will begin.

DR. E. W. PARKER
Secretary Anthracite Bureau of Information, Philadelphia

The bonanza beds which have produced the cheaply mined and also the high grade anthracite of the past are rapidly approaching exhaustion. This is particularly true in the Northern or Wyoming Region, where the beds lie relatively flat and shallow and are consequently more easily and cheaply mined. The rate of extraction in the Northern or Wyoming Region has been much more rapid than in the Lehigh and Schuylkill Regions, where the mining problems are much more complex.

The anthracite operators are alive to the serious situation that confronts them in the not distant future. They realize that in order to meet the demand for the present day tonnage attack must be made on the deeper and thinner beds, which, experience has shown, carry higher percentages of impurities, the removal of which requires more care and consequently more costly preparation. In an official report which the writer made to the United States Geological Survey as long ago as 1910, he said:

> "The conditions under which the anthracite mines are operated, the greater depths to which the workings are carried, the consequent increased expense of mining, and the increasing cost of labor all contribute to make anthracite fuel more and more a luxury. No hope is held out to the consumer that anthracite will in the future be sold at lower prices than those which prevail today, but, on the other hand, there is every reason to believe that prices must advance in accordance with the increasing cost of production. It is only by reason of economical administration that prices are not higher than they are."

These conditions are even more in evidence now than they were a decade ago. Recourse is already being made to the deeper and thinner beds, and as these workings become deeper, necessarily the cost of production, outside of any consideration of wages, must constantly increase. With the increased pressure due to greater depth more support must be given to the haulage ways and working places, more water must be pumped and to greater heights, more air must be provided for ventilation, more expenditure in every way must be made per ton of coal mined and prepared for market. To meet these conditions every means that engineering skill and administrative ability can devise is being and will be employed. All that can be hoped to be done, however, is to keep the production costs from rising to such an extent that prices will be prohibitive. Every ton of coal mined today costs a little more than a ton mined yesterday and a ton mined tomorrow will cost more than the ton mined today. Such an increased cost is incalculably small when applied to a single ton, but it will be measurably felt in the production of 80,000,000 tons a year for a period of ten years.

Unfortunately, every ton of the 80,000,000 tons produced is not under present conditions available as domestic fuel. In the first place about 11 percent of the total production is consumed in the operation of the collieries and breakers, leaving say 70,000,000 tons of commercial fuel. Under the best practice the mine run production cannot, on the average for the region, be made to yield more than certain percentages of what are known as the prepared or domestic sizes. That is to say, for every hundred tons of coal that comes to the breaker, the following is about the best that can be obtained of domestic coal:

Egg	13.5
Stove	18.5
Nut	23.
Pea	8.5
	63.5

Of the four domestic sizes one—pea coal—sells at little, if any, more than the actual cost of production in normal times, and under conditions that have existed during the last few months considerable quantities of pea coal have been forced on the market at prices which did not equal the cost of producing it. In fact during all of the past summer stove coal was the only size in active demand and operators have been compelled to insist upon dealers taking certain proportions of the other sizes along with the stove coal. It is a self evident proposition that no industry can continue to produce 100 percent of output when the market will absorb only one grade that represents less than 20 percent of the total.

If, however, all of the domestic sizes could be disposed of as they are produced, and were not subject to any fluctuations in demand, there still remains the fact that they altogether constitute but 70 percent of the total product of the mines and it must be remembered that it costs just as much to produce a ton of buckwheat No. 3 or barley, selling at $1.50 a ton as it does a ton of stove or chestnut selling at $8, or $8.25 a ton. The 30 percent of

the output represented by the small or steam sizes sold in competition with bituminous does not realize the cost for labor alone. It has been shown in some of the recent advertisements authorized by the General Policies Committee of Anthracite Operators that the average return to the anthracite producer for his product is $6.15 a ton at the prices prevailing this year. That is to say, his average realization on his entire production is $2 a ton less than you pay for your domestic fuel at his breaker.

The Federal Trade Commission in its report on anthracite (June 30, 1919) gives the result of an investigation extending over a period of six years from January, 1913, to December, 1918, inclusive. It covered the entire war period and it shows that the producer's margin on the average during the six years ranged from 19 cents to 72 cents a gross ton. A weighted average of the table given in the report shows that the average margin for the entire period was 42.3 cents a ton. If this margin were all net profit it would not represent a fair return on the investment, for, taking the Engineers Committee of the United States Fuel Administration as authority, the average investment in an anthracite colliery is from $7.50 to $8 per ton of output. That is to say, a property capable of producing 100,000 tons a year requires a cash outlay of from $750,000 to $800,000. Ten percent net return on capital invested in an industry involving such hazard as anthracite mining would not be unreasonable. It does not amount to half of 10 percent.

During the war, when the anthracite industry was under the control of the Fuel Administration, there were three instances of advances in wages to meet the increase in the cost of living, although the contract entered into in 1916 with the United Mine Workers of America was for a period of four years ending March 31, 1920. When the first of these increases was granted it was estimated that the additional cost would be 45 cents a ton, but the Fuel Administration, believing that the producing companies had allowed a factor of safety in their estimates, would permit an advance only of 35 cents a ton in the price. The Committee of Engineers subsequently reported that the increase in cost was 76.8 cents a ton, the operators, of course, absorbing the difference. The loss thus sustained was partially but not entirely made up in the negotiations of the later advances.

Dr. Garfield, however, had the grace to announce when releasing the anthracite industry from government control that "an investigation had shown that the general increases in the price of materials and labor had raised the cost of mining anthracite to such an extent that many of the companies were not receiving a fair return and that some producers of necessary coal were actually sustaining a loss on the sale of coal at the government prices, in spite of the two increases allowed on account of advances to labor."

Anthracite operations are now being carried on under a wage scale based upon the Award of the Anthracite Coal Commission of 1920, and which, by order of the President himself, were written into a contract which does not expire until March 31 of next year. The anthracite producers have definitely stated that they will not break this contract and the leaders of the miners with even more emphasis have announced that no reduction in wages would be agreed to.

One word more before leaving this part of the discussion. The anthracite industry is the only one of the important American industries that did not partake of wartime profits. No surpluses were garnered into the treasuries of the anthracite companies from which may now be drawn funds to permit of selling their product at a loss which some of our newspaper friends have been generous enough to suggest should be done. The Interstate Commerce Commission has stated that there was no prospect of any reduction in freight rates before next spring, and in the more recent discussion of the necessity for certain reductions in transportation costs agricultural products are the only ones to which the reductions should be applied.

In spite of the warnings that have been given many consumers have held off placing their orders, relying probably on the influence of a "buyers' strike" to force down prices. It is not in the cards, and those "who have not while they may" laid in their supplies during the summer will have no one but themselves to blame if they experience any trouble or discomfort the coming winter. Many there are too, unfortunately, who have not had the funds to lay in their fuel supplies in advance. These are largely consumers of chestnut and pea coal, the fuels for small houses and small stoves. This has resulted in the stocking of large quantities of these sizes in the storage yards, from which they can be readily distributed when the times comes, and this class of consumer will be taken care of.

Whether the hope for reductions in cost of production and of transportation will take place in the spring or not it is, of course, impossible to say. Let us suppose that through a change in labor costs of producing anthracite might be reduced to within possible speaking distance with those that prevailed in 1916. Whatever base may be reached it will be one from which because of the natural conditions mentioned in the earlier part of this discussion, an ascending tendency in cost and consequently in price must be expected. However unwelcome the information may be the fact remains that the days of cheap anthracite have passed. It is almost today a luxury fuel and it will become more and more so as the deposits are depleted and the period of decline in the quantity of annual production approaches.

There is but one way in which this tendency toward increasing cost of domestic anthracite may be combated, or postponed, and that is by the more efficient and economical utilization in its consumption. That is up to the consumer.

A greater utilization of the smaller or steam sizes is an economy factor of importance, upon which special stress is laid in a pamphlet just issued by the Anthracite Bureau of Information for general distribution among consumers. Of even more importance to the householder, however, particularly the one who is contemplating a change of his heating apparatus or the building anew, is the fact that there are now available magazine feed furnaces which are especially adopted to the use of buckwheat No. 1. This size sells at prices below those of the larger sizes and enjoys a lower freight rate from the mines to the consumer. The magazine permits slow, automatic and regular feeding of coal to the combustion chamber and eliminates much waste common in use of ordinary types of furnace construction.

STANDARDIZATION NOT A BAR TO PROGRESS OR INVENTIVE GENIUS

By E. D. Knight

THE AVERAGE coal operating man if approached on the subject of the Standardization of Mine Drainage probably would think immediately of mine pumps. If he were one of the unfortunate, who is forced to worry about repair parts for half a dozen different makes and styles of pumps all of approximately the same capacity and used for the same duty, he would be almost sure to do so. This promiscuity of similar equipment might be due to his own haphazard methods of purchase or it might be an inheritance, but his conclusions in either case most likely would be one and the same. He would think at once what a good thing it would be for him if all manufacturers of mine pumps turned out equipment on which, in the same sizes and capacities, all parts were interchangeable. This would seem to him an almost ideal state of affairs, and one which in his particular case would eliminate considerable cost and trouble The question is, however, just how far into such a condition his thoughts would carry him.

Let us suppose that a complete standardization of pumping equipment along the lines suggested actually did exist. What, then, would be the result? To the manufacturer it would mean the stifling of progress and inventive genius in the design of his equipment. It would mean conformation to rigid standards down to the smallest bolt or nut, which might or might not fit in with his ideas of efficient and economical pump delineation. It would mean that if any progress were made it would have to come through either government experimentation or through a centralized body of representatives of all manufacturers, and should such body function efficiently, it would be constantly discovering refinements in pump construction which would tend to make obsolete different standardized equipments soon after they were put on the market.

E. D. KNIGHT

Chairman of the Sub-Committee on Mine Drainage, Standardization Division, American Mining Congress.

To the user it would mean that he was deprived of any benefits which might accrue to him through the opportunities of competitive buying. It would mean that he must take the equipment offered him, whether or not it conformed to his ideas of what he wanted. It might mean that the manufacturer, knowing that any improvements put on his pump would have to go on all pumps and that the user must accept the pump anyway, would decide that progress was not worth while, and thus the purchaser would be forced to accept an article of inferior quality. But worst of all, it would be quite likely to mean a combination and arbitrary price fixing, such as the coal operator is forced to go up against in several lines of machinery already, and against which he is powerless to retaliate in kind if he desires to retain his own freedom.

Would it not be better then, instead of attempting to enforce a standard which for their protection might cause manufacturers to bring their equipment down to the level of the mediocre, to try to eliminate the unfit without in any way limiting progress or handicapping inventive genius?

It is to this end that the committee on the Standardization of Mine Drainage of the General Committee on the Standardization of Mining Machinery, Coal Mining Branch, of the American Mining Congress, have tried to direct their efforts. While they realize that mine drainage problems differ widely due to local conditions, they, nevertheless, believe that these may be separated into several general classes from the standpoint of service required from mine pumps. They have attempted, therefore, in their report, to divide drainage problems into these several classes and to set down certain specifications for pumps suitable for service within each class, which in no way limit the design of said pumps but rather set for each a criterion of performance within its group.

It is to be hoped that these recommendations will bring about a desirable condition in the following manner: They will be available to the mine operator, who either from inexperience or for any other reason does not know just what he wants when he is contemplating the purchase of a pump. By consulting them and insisting that any pump he buys conforms to them, he eliminates equipment improper for his service. With no demand for them, unfit pumps would be forced off the market, and all manufacturers would have to come to a proper standard of performance; while at the same time they would maintain their competitive individualities of design and progress.

Let us refer back for a moment to our original supposition, that the average coal operating man upon being approached on the subject of the standardizing of mine drainage would be likely to think at once of standardizing mine pumps. Mine drainage does not always mean pumping, but unfortunately there are all too many of us who seem to be under the impression that it does. So firmly is this idea fixed in the minds of some of us that we often refuse to consider anything else. Many times the operator on being confronted by a new water condition goes to his mechanical man and says, "What sort of a pump shall we put here?" instead of saying to his engineer, "Would it be possible by a little simple ditching to eliminate this water or to carry it to the suction of a pump already installed?" Or if he has neither of his own to consult, he is all too likely to call in a pump salesman rather than first employing an engineer. It is the one of the first principles of mechanics that one large unit working to capacity is more efficient than several small ones, and yet in many cases pumping inside the mines is handled by methods just the reverse of this, and the same water is often pumped two or three times when by a little more care and investigation before laying out the installation one pumping would suffice.

Sometimes in the case of drift mines it is possible by constructing an extensive and permanent system of ditch drainage either to handle all the water from the mine or to collect and bring outside the water discharged by small pumps used in development works. Too often, however, the initial cost involved in such a layout forms a barrier

beyond which the operator refuses to look, thereby losing sight of the fact that when such a drainage system is completed the cost usually stops, while an elaborate pumping equipment generally means continued expense for depreciation, maintenance, and attendance throughout the life of the mine. Also drainage ditches when properly put in are more reliable than pumps and function automatically during shut-downs from any cause whatsoever, while pumping involves expense for power and attendance whether coal is being produced or not.

There is a further point which coordinates the above with the first part of this article. If advantage were taken of all opportunities to utilize other methods of drainage the number of pumps purchased would naturally be decreased and the standards of pump manufacturers would consequently be raised due to keener competition.

Needless to say, the points to be considered in investigating drainage ditch possibilities and proper methods of laying out same are a part of what the committee on drainage is trying to bring before the operating public.

The writer recently had occasion to be in the office of a concern which sells mine pumps. The sales manager of this organization said to him, "Do you know? A man called me up this morning, whom I believe you would consider a good operating man. He said, 'I want a three-inch pump; have you got one in stock?' I asked him, 'What capacity do you want?' 'Hang the capacity,' he said, 'I want one with a three inch suction and a two and a half inch discharge.'"

This condition, as inconceivable as it may seem, does actually exist in a good many cases, and for this reason the committee on mine drainage has included in its report a number of rules for guidance in the installation and maintenance of mine pumps which it is hoped may be adopted as standard practices and work for elimination of such ill advised occurrences as the above mentioned; as well as to improve methods and mediate against the careless treatment to which many pumping installations are now subjected.

It is not the writer's idea or intent to give the impression that any of these, perhaps ideal, conditions can be brought about simply by consultation and adherence to the committee report, as it now stands, for this is merely in its infancy. It is his idea, however, to set down the aims of said committee for the perusal of mining men and, should they think the result worth while, to ask their whole-hearted co-operation in achieving it.

MEMORIAL TO FRANKLIN K. LANE

ONE OF THE LOFTY PEAKS of the Rocky Mountains has been named in memory of Franklin K. Lane, Secretary of the Department of Interior. The peak is located in Tatoosh Range and is in Mt. Rainier National Park. The United States Geographic Board issued the following announcement:

Lane Peak, three pointed (altitude 6,000 feet), in Tatoosh Range, rising ⅓ mile northwest of Cliff Lake, Mount Rainier National Park, Pierce County. Washington. (In honor of the late Franklin K. Lane, former Secretary of the Department of the Interior.

The proposal of giving this name was made by the Rainier National Park Advisory Board, Seattle, Washington, Ashael Curtis, chairman.

GOLD COMPANY WILL QUIT UNLESS McFADDEN BILL IS PASSED

UNLESS the McFadden Bill is enacted, another gold mine will be lost to the country. The necessity for the enactment of legislation relieving the gold industry is set forth very pointedly in a letter from A. C. Ludlum, president of the Derry Ranch Gold Dredging Company, to Dr. H. Foster Bain, director of the United States Bureau of Mines. Mr. Ludlum wrote as follows:

"It just occurred to me that the closing down of another gold mine in this country and a brief account of the company's operations might prove of interest to you. I therefore submit the following facts:

"The Derry Ranch Gold Dredging Company completed its dredge at Leadville, Colorado, and began operating just five years ago. Our operating costs during the first two years were about 7 cents per cubic yard and after that they began to climb. Last year they were 14 cents per cubic yard and this spring when we found that we did not make any money under present conditions, we closed down the dredge and we expect to sell and dismantle it. That is, unless the McFadden Bill should be passed in the near future, and if this should happen before the dredge is dismantled we would undoubtedly start up operations immediately.

"During the five years existence of the dredge, we have produced over $750,000 in gold. We still have enough unworked ground averaging about 12 cents per cubic yard that would last for quite a few years, but if the dredge is dismantled the remaining gold will in all probability not be recovered in our day, as it would not pay to install another dredge on the balance of the ground remaining unworked.

"Our experience is only one of many as you well know. The French Gulch Gold Dredging Co. of Breckenridge went into the hands of a receiver this spring. This company had operated some fifteen years and has a gold production of over $1,250,000. The Tonopah Placer Co. of Breckenridge, Colo., is only operating one dredge at present.

"The gold dredging industry and its consequent gold production is seriously endangered unless some relief is provided and the passage of the McFadden Bill would seem to provide adequate relief to the gold producer and stimulate the gold production."

OIL SHALE WORK EXTENDED

THE LABORATORY in which the Bureau of Mines is doing co-operative oil shale work at Boulder, Col., has been enlarged and considerable new equipment has been installed, in preparation for more extensive work on Colorado shales. Additions to the staff at the laboratory include Douglas A. Fell, a native of New South Wales, whose father is the owner of the only producing oil-shale company in Australia.

Important changes have been made in the temperature measuring apparatus and in the drive mechanism of the horizontal retort at this station. A new location of pyrometers in the retort proper and the retort furnace is expected to indicate more accurately the temperature of the shale in the retort and also make possible more definite control of retorting conditions. During the past two years several attempts have been made to classify oil shales by chemical determinations of various sorts but these have not been successful.

Experiments in refining the oils produced from Colorado oil shales have been started. Various methods of procedure will be tried and the concentration of the refining reagents changed until the most satisfactory results have been obtained. For the purpose of comparing different oil shales it has been tentatively agreed that the most satisfactory oil is that which yields the highest percentage of crude naphtha containing the lowest percentage of unsaturated hydrocarbons.

VALUATION TERMS AS APPLIED IN THE MINING INDUSTRY

By Wm. H. Kobbé*

THE SUBJECT of valuation of mining properties has been given much thought and study during recent years, particularly in connection with the assessment of Federal and State taxes based upon net income or the ad valorem method.

A valuation or engineering appraisal is necessary to properly establish true market values for invested capital and as a basis for allowed depletion of mineral reserves.

The subject of valuation in its economic aspect becomes exceedingly abstract and involved and leads to interminable discussion unless approached with a clear understanding of the limitations imposed by practical application.

Various Government Regulations have attempted to define certain valuation terms, but the results are not entirely satisfactory and are more or less interpretative of terms or phrases occurring in the various revenue acts.

The Glossary of Valuation Terms presented in this article has been prepared with a view to defining the more important economic and income tax expressions for the every day usage of the mine operator or business man. Neither academic nor economic exactness is claimed for these definitions and they are offered with the full conviction that they are open to argument or criticism. Only through such argument and criticism is the subject advanced toward enlightenment.

If the Glossary will at least encourage consistent use of valuation terms or become an incentive for further thought and study, it will have served the purpose for which it was prepared.

Some of the terms are interesting because of certain peculiar reasons prompting their definitions. The peculiarities are noted in the following paragraphs.

WILLIAM H. KOBBÉ

Formerly valuation engineer in charge of inorganic non-metals, Natural Resources Subdivision, Income Tax Unit.

In defining the application of "value" it would seem important to bring out the thought that something more than "exchange value" is frequently a determining factor. That "there can be but one correct amount for any particular value, but there may be several different values for the same commodity" may be illustrated by mine rails. There is but one correct value for such rails as metal; but one correct value as rails; and but one correct value as a mine railroad.

The word "fair" has been defined because of its qualifying character in the phrase "fair market value."

"Fair market value" has been discussed pro and con in page after page of legal briefs and decisions. The Glossary has made use of the commonly accepted definition with the added provision that "both seller and purchaser possess enlightened knowledge as to the particular commodity changing hands." This provision appears essential and is of peculiar application to mineral properties. A technical ceramist or economic geologist recognizing the distinctive qualities of a deposit of kaolin might very well persuade the farm owner to part with it for a consideration in no degree a measure of its "fair market value."

The term "service value" is not only important but is believed to be new to income tax procedure. It is peculiarly applicable to mineral deposits and the definition requires no comment.

The definition for "utility" is possibly too concise and may be open to criticism. The purpose of its inclusion was to differentiate between farm land values and mineral values, especially in those industries dependent upon deposits of inorganic nonmetals such as sand and gravel and various rock products.

No attempt has been made to define good-will, but a definition of "popular demand" appears desirable on account of its application to certain mineral deposits.

The term "economic injury" is rather clearly defined and has been included in the Glossary for the purpose of enabling the recognition of true depletion in spite of compensating appreciation due to other causes.

The definition of "minerals" has been taken from the Regulations and is a popular rather than a technical conception and therefore lacking in precision.

"Mine" has been defined as "a commercial deposit of mineral irrespective of method of recovery" because this term is used in the Regulations in connection with "discovery."

The definition of "discovery" is important. The Regulations simply state that discovery means the discovery of a "new mine." Such a definition is not particularly helpful unless "new mine" is defined. With this idea in view, the definition of "discovery" in the Glossary is an attempt to state specifically the true intent of the Regulations. It is submitted with the conviction that each case or claim for discovery must be decided on its own merits. If the definition is conceded to be correct in principle, there should be no question of its true and conservative application in many specific instances.

With the foregoing explanation of certain terms and the understanding that the Glossary is simply a translation, it is presented to the industry with the hope that it will lead to more consistent usage and encourage helpful discussion.

Glossary of Valuation Terms

VALUE. Means not only exchange value in dollars, but may properly be used to measure utility. The utility of such an unexchangeable article as the human hand is measured in dollars for the purposes of award or compensation. There can be but one correct amount for any particular value, but there may be several different values for the same commodity.

FAIR. The word "fair" implies justice.

FAIR MARKET VALUE. Is the amount of money which would induce a sale as between a willing seller and prudent purchaser; provided both seller and purchaser possess enlightened knowledge as to the particular commodity changing hands.

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SERVICE VALUE. As applied to mineral deposits this term has somewhat the same meaning as "intrinsic value," excepting that it is a broader term and includes the extrinsic factor of availability. It therefore may be defined as the value due to quantity, quality, and location, irrespective of ownership or management. To use a marine expression, it is the "as is and where is" value. It exists regardless of earnings.

GOING VALUE. Also known as "Going concern" or "Going concern value." It relates to establishment of earnings and may accrue in addition to and over-and-above "Service Value." The wise exploitation of a mineral deposit for profit results in a certain going value accruing to such deposit through actual monetary returns.

UTILITY. Implies principal use. Its value is measured by its suitableness for the service intended.

POPULAR DEMAND. Is used in its ordinary meaning. It is applicable to mineral deposits on account of the insistence of the trade for certain recognized brands or descriptive appellations. For example, certain marbles, precious stones and mineral products under trade names have become so popularized that proper consideration of this fact is essential to a fair valuation.

Asbestine, celite, scouring powder, green slates, Vermont, Tennessee, or Georgia marble, and Mexican opal are a few examples of real or fancied superiority possessed by mineral products from special localities or sold under popular names.

ECONOMIC INJURY. Results when a portion of a valuable mineral deposit is removed or depleted. Such economic injury is suffered irrespective of appreciated value due to enhanced real estate prices or other extrinsic influences. A valuable deposit of kaolin is "economically injured" through depletion notwithstanding the fact that the building of a new railroad has enhanced the total value of the property. The value of the deposit itself has sustained depletion.

MINERAL RIGHTS. The property interest of one who pays a periodical rental to the owner of the property for the privilege of quarrying or exploiting a mineral deposit.

MINERAL FEE. The ownership of the mineral alone. It does not include fee title to the surface.

DEPRECIATION. Means the gradual reduction in the value of property due to physical deterioration, exhaustion, wear and tear through use in trade or business.

OBSOLESCENCE. Means the gradual reduction in the value of property due to the normal progress of the art in which the property is used, or to the property becoming inadequate to the growing needs of the trade or business. Obsolescence, a gradual lessening of value, must be distinguished from "loss of useful value," which contemplates an abrupt termination of usefulness.

LOSS OF USEFUL VALUE. Results when through some change in business conditions the usefulness of the asset is suddenly terminated. Thus, the physical equipment of a mine may lose its useful value through the unexpected encountering of unfavorable geologic conditions.

AMORTIZATION. Applies particularly to those facilities constructed wholly or in part to produce articles for the prosecution of the great war. For example, a cotton mill constructed under war prices or built over-size in anticipation of a long usefulness may be subject to amortization, wholly or in part. The term is also used to express the "writing off" of certain amounts over the useful life of the asset. For example, the amortization of the amount or bonus paid for a leasehold covering a definite period.

DEPLETION OR DEPRECIATION ALLOWED. Are the amounts allowed as deductions from gross income based upon the depletion or depreciation suffered during the taxable year.

DEPLETION OR DEPRECIATION SUSTAINED. Are the amounts necessarily deducted from invested capital or cost on account of depleting or depreciating the mineral deposit or physical property from date of acquisition. It is a recogniting in audit of what actually happens.

MINERALS. Comprise ores of the metals, coal, oil, gas and the various inorganic nonmetals.

ORE. The substance of a commercially significant mineral deposit formed by mineralizing agencies of some special localized character.

MINE. A commercial deposit of mineral irrespective of method of recovery.

MINERAL PROPERTY OR "PROPERTY" includes mineral deposit, plant and equipment, development, and the surface value of the land. The value of a mineral property is the sum of the values of its component parts.

MINERAL DEPOSIT OR "DEPOSIT" refers to minerals only, such as "ores only" in the case of a mine, "mineral only" in the case of an inorganic nonmetal, "oil only" in the case of an oil well, and to "gas only" in the case of a gas well.

DISCOVERY. Is not applied to extensions of known deposits or ore bodies. It may be defined not only as a discovery of a new mine or deposit not previously known to exist but the discovery of the true nature of a known deposit. The utility of a deposit may be discovered as well as its physical presence. For example, a deposit of "clay" or "dirt" may be discovered to be high grade Fuller's earth. There is no advantage in knowing that a deposit exists if ignorant of its true character.

BASIC DATE OR "SIGNIFICANT DATE" means the date of valuation such as March 1, 1913, date of acquisition, date of reorganization, or date of discovery, or within thirty days thereafter.

NET OPERATING PROFIT. Is the profit per ton or other unit derived from operations before deducting depletion, depreciation and interest on borrowed capital.

IN GENERAL

The value of a mineral deposit comprises two main elements; an intrinsic element based on the qualities of the material itself and an extrinsic element based on its availability and the nature of the demands for it. These elements may not be sharply separated and neither exists without the other. The ratio of these two elements varies according to the bulk and unit value of the material and its immobility.

PRESIDENT LORING PLEASED WITH CONGRESS CONVENTION

FOLLOWING his arrival in San Francisco after attending the Chicago convention of the American Mining Congress, President Loring in a newspaper interview expressed a favorable opinion of the results of the meeting. He outlined the important activities taken at Chicago and pointed out wherein the Mining Congress is performing an important service for the country. He said:

"The American Mining Congress was attended by members from all parts of the United States, and judging by the faithful attendance and the lively part the members took in the proceedings of the various meetings, I am sure the congress is being looked upon by its large membership as important to the mining industry of this country. Such men as Charles M. Schwab, and many other large men representing mining, attended the meetings and spoke regarding the development of the United States.

"Matters of great importance to the mining industry generally were dealt with at the various committee meetings, the helpfulness of which will be felt as time goes on.

"The McFadden gold bill is hung up pending the sanction of Secretary of the Treasury Mellon, without which we are helpless. However, the campaign for the passage of the McFadden bill was worth while, as it has advertised the gold mines of the United States in a way that could not have been done so well through any other medium.

"The Congress was a great success and will be followed by one of greater importance next year. The meeting place has not been decided for 1922.

"I was pleased with California's mineral exhibit at the congress. This would not have been possible without the assistance of State Mineralogist Fletcher Hamilton."

PROTECTING THE DYE AND CHEMICAL INDUSTRY

By F. G. Moses.

SYNTHETIC chemicals, dyes, medicines and perfumes are manufactured from four general classes of materials; coal tar, sulphur, alkalies, nitrogenous products. All of these materials can be produced cheaply in the United States, providing the necessary consumption is available.

As coal tar is one of the most important of all of these raw materials, it is evident that the coal mining industry should be very interested in the establishment of a successful synthetic chemical manufacturing business in the United States. There are several evident reasons why we should be independent of the world for these necessities of modern civilization.

For instance, there are about three billion dollars worth of finished products dependent upon the color industry alone; besides several millions of workers employed in producing these finished products. It does not seem good economics to be dependent upon Germany or any other foreign producers for such vital and important raw materials.

Everyone is well acquainted with the close relation between dyes, chemicals and the manufacture of military explosives, war gases and other constituents of modern chemical warfare. Statistics show that the great war was started on a 100 percent explosive basis but ended as a 55 percent chemical war. We hope that the war just finished is the last, but if it is not the next one will be close to a 100 percent chemical war.

If we permit our foreign competitors in the chemical and dye industry to dominate the world with these products, it will not be necessary for possible military antagonists to have either an army or navy for the reason that they can depend upon their chemical industry to furnish them with the necessary munitions for modern chemical warfare.

It was shown by one of the Congressional committees that if the Germans had had 4,000 tons of a military liquid that we were producing at the rate of 200 tons a week at the time of the armistice, and 3,000 aeroplanes to distribute this liquid, the American first army in France could have been eliminated in from eight to ten hours.

It has been the cry of a certain section of American business that, although these facts are true, all that will be necessary to save our present successful American chemical and dye business is a high tariff. It must be admitted that in the case of many manufactured products this would be true but for several economical and technical reasons such a tariff would not protect and allow for development of a dye and chemical industry in this country.

Germany, who will probably be our greatest competitor in the future on this business, has invested in this industry half a billion dollars, gold. Her industry is organized to supply the world. For military reasons, England, France, Italy and Japan have enacted embargoes prohibiting the importation of dyes and chemicals to their respective countries. This means that the organized monopoly of Germany must depend upon the business of the United States and the Orient to absorb their enormous production of these products.

Even before the war was over, the Germans realized this and in January, 1916, entered a fifty year agreement establishing uniform working conditions, uniform hours of labor, uniform wages, agreed to exchange patents and trade secrets and to divide the business of the world among them on a pro rata basis. This was probably her first move in the "war after the war."

These facts give some idea of the necessity for Germany dominating the chemical and dye business in the only large country which has not prohibited the importation of dyes and chemicals.

Speaking of dyes alone, there were only about 30,000 tons consumed in the United States per year. The Tariff Commission shows that the average value of these dyes is approximately $1.00 a pound. With a 300 per cent ad valorem duty on these products, which, by the way, due to foreign exchange, is only 100 percent, they could "jump the tariff wall" and practically give away all the dyes consumed by American industries in a year at something like fifty million dollars, or 10 percent of their capital investment.

They would not have to spend anything like this amount of money, however. All that would be necessary for them to do is to pick out the few dyes and chemicals on which the present American producers are making money at the present time and carry out the same plans. Say a million pounds of these dyes were selected for elimination, they could afford to pay a 500 percent American tariff and give away these dyes and chemicals for a year at a cost of approximately 1 percent of their capital investment. This, of course, would be good business and in the desperate straits in which the chemical industry is as a result of embargoes in other countries, they would, undoubtedly, do this.

For technical reasons, in the manufacture of many products, it would be really impossible to put a tariff on many of the impostant finished products. Take for instance, the case of Indigo, one of the most important of these products. Say a prohibitive tariff of 500 or 1,000 percent ad valorem had been passed against this particular product. Indigo is a result of, say, ten distinct manufacturing operations. At the end of the ninth operation, we obtain a product known as Indoxyl. Indoxyl is an entirely different substance than Indigo and no one could, by any means, prove that they are the same product However, ton convert Indoxyl into Indigo, it is only necessary to place the former substance in a vat and blow air through it, causing the Indoxyl to be converted into Indigo. In this case, it would only be necessary for the Germans to import Indoxyl into the United States as such and blow the air through it in this country. To protect the Indigo any sort of tariff would be useless against such a manipulation of this sort.

Some of the best business brains in the United States, including the army and navy departments, have given much thought to this problem with a result that they have decided that, apparently, the only salvation for our 200 or more plants in operation in this country at the present time and our military independence is by means of a licensing embargo. This embargo is simple, practical of application and would, undoubtedly, obtain the results that most everyone agrees are necessary.

The principal argument against the licensing embargo is that it will enable capitalistic monopolies to control the business. A careful reading of the embargo section can disprove this fact. The section states definitely "that none of these materials shall be imported, except that it is shown that the materials are not produced in this country in satisfactory quality, quantity or at satisfactory prices."

It would seem in view of these facts that public sentiment should, after understanding the facts of the matter, be brought to bear in such a way as to show the legislative forces of our country that the American public demands

that the necessary steps be taken to protect our recent chemical industry from foreign dominance, even though this protection involves a radical departure from previos legislation.

ARIZONA CHAPTER DEVOTES MEETING TO TAX PROBLEMS

A MAJORITY of the mining men of the state attended a recent meeting of the Arizona Chapter of the American Mining Congress, held at Jerome, when the increase in taxation made during recent years was discussed. Among the speakers were Robert E. Tally of the United Verde Mining Company, Harry Fennemore of Phoenix and W. S. Boyd, the latter reading a paper prepared by L. S. Cates.

Mr. Fennemore stated that he intended to cover the general field of taxation without special reference to the mines, as the problems of all the taxpayers of the state are substantially similar and what affects the farmer, the business man and the cattleman, affects also and in equal measure, the mine operators.

"The tax problem in Arizona is rapidly becoming acute and many tax conditions imperatively demand an immediate remedy," he said. "The title given my address is somewhat misleading, as I do not propose to discuss mine problems alone, and I believe that the difficulties confronting the metal producers, although perhaps more technical and more complicated so far as the method of imposing taxes is concerned, do not differ in kind from those which confront the other basic industries of the state."

After a brief reference to the theoretical valuation of property in Arizona at its full cash value and a statement and that this ideal had not been reached by any manner of means, some kinds of property being grossly over-assessed and others escaping their fair share of the general burden, Mr. Fennemore called attention to the fact that all state and county taxes have risen to an incredible height and that such taxes, if continued for a few more years at the same rate of increase, will spell nothing less than complete confiscation within two decades.

According to some reports of the meeting, Mr. Fennemore made his auditors gasp when he presented figures proving that county tax rates have risen from 50 percent, in some counties, to 900 percent in others and that the average for the entire state is a 600 percent increase.

Following the delivery of Fennemore's address, W. S. Boyd read a paper on the same topic, prepared by L. S. Cates, who was called east on business and could not attend the meeting.

There was an almost uncanny similarity in the figures adduced by Mr. Cates and those presented by the Phoenix tax expert.

The general manager of the Utah Copper company made his chief point that while the population has increased but 62 percent in ten years and the assessed valuation of property has increased 800 percent in the same period, the actual levies for taxation have increased more than 70 percent in the face of the greater valuations —an increase out of all reasonable proportion.

He cited the fact that New Mexico, with a population greater by 27,000 than that of Arizona, has a tax rate of $3.51 per $100 valuation as against a levy of $15.28 in this state.

Like Mr. Fennemore, Mr. Cates absolved Governor Campbell from responsibility for the excessive burdens. He showed that there has been a positive reduction in the administrative expenses of the state and that the average distribution of each dollar of taxes is 12 cents for municipal purposes, 26 cents for state purposes and 61 cents for county levies.

Robert Tally, commenting on the Fennemore and Cates papers, declared both had hit the nail squarely on the head and that the facts presented warranted immediate action by every taxpayer in the state. He said that Governor Campbell is aware of the bad conditions existing and that further substantial reductions in state expenditures may be looked for, the governor being determined to effect such savings, even if it becomes necessary to call a special session of the legislature.

ARIZONA DIRECTORS SEEK LOWER FREIGHT RATES

DIRECTORS of the Arizona Chapter of the American Mining Congress, at a meeting held in Jerome, adopted two resolutions demanding reduced freight rates. Such reduction, they held, constituted a condition precedent to the resumption of large-scale mining operations. The resolutions follow:

WHEREAS, The resumption of mining copper depends upon the sale of the product at a profit, and,

WHEREAS, The large items of expense in cost of production and marketing are freight charges on mining machinery, material and supplies, freight on ores to smelters and copper bullion to refineries, now therefore, be it

RESOLVED, That this Congress notify the carriers serving the mining industries of this state that before it will be possible for the mining companies to resume operations it is imperative that the cost of transportation be materially modified.

WHEREAS, A grave situation faces the mining industry from all angles, in that the present selling price of copper is 4 cents per pound less than the average selling price based upon ten years previous to the great war; that practically every cost attached to the mining industry has risen to a height entirely inconsistent with pre-war conditions; that the burden of taxation within the state of Arizona has become so heavy by reason of the tremendous expenditures being made for public purposes, and resulting in the net cost for taxation alone of 1.7 cents upon every pound produced; and

WHEREAS, if the present burden of taxation is maintained or is increased, as seems to be the prospect now before us, there is grave danger that this factor of itself will prevent or greatly delay the resumption of mining operations, even under more favorable industrial conditions than are now present; now therefore be it

RESOLVED, That efforts shall be made by those interested in the mining industry to bring before the tax-payers of the state the serious problems now confronting the state, and endeavoring in every way to influence all the boards or other officers having jurisdiction in the matter of public expense toward cutting down public expenditures and conserving the money of the taxpayers, to the end that the present excessive rates shall be promptly and materially reduced, and that the present burden of taxation shall be lightened upon every class of property in the state.

RESCUE STANDARDIZATION COMMITTEES ARE NAMED

INITIATION of a program for definite, practical work seeking to establish international standards governing use of mine-rescue apparatus is marked by the announcement by the Bureau of Mines of the tentative subcommittees of the Mine Rescue Standardization Committee.

Sub-Committee No. 1, on international mine-rescue standards, will act as a liaison committee to representatives of other countries than the United States. Lieut. Col. J. A. S. Ritson, inspector of mines of Great Britain, has been appointed chairman of this committee. Robert

Strachan, senior inspector of mines of British Columbia, is the Canadian representative. J. W. Paul, chief of coal mine investigations of the United States Bureau of Mines, Pittsburgh, Pa., is secretary. Representatives from Belgium and France will be named later.

Sub-Committee No. 2 will deal with rescue-apparatus requirements and tests for permissibility. D. J. Parker, chief of the division of mine-rescue cars and stations of the Bureau of Mines, has been named chairman.

Sub-Committee No. 3 will take up the subject of physiological effects in use of mine-rescue apparatus and methods for detection of dangerous gases. Dr. R. R. Sayers, chief surgeon of the Bureau of Mines, is named as chairman. Other members of this committee are Dr. A. F. Knoefel, Terre Haute, Ind., Dr. Yandell Henderson, Yale University, New Haven, Conn., and A. C. Fieldner, superintendent, Pittsburgh Experiment Station of the Bureau of Mines.

Sub-Committee No. 4 will consider the matter of regulations for use of mine-rescue apparatus in coal mines. Robert M. Medill, director, Department of Mines and Minerals of the State of Illinois, Springfield, Ill., is chairman, and C. A. Herbert, district mining engineer of the Bureau of Mines, Vincennes, Ind., secretary. Members of this sub-committee who will study the matter of regulations for use of apparatus in mines having flat coal beds are E. H. Denny, mine safety engineer of the Bureau of Mines, and Robert Lilly of West Virginia. Regulations for use of apparatus in pitching coal beds will be taken up by J. J. Forbes, mining engineer of the Bureau of Mines, Birmingham, Ala., and J. J. Corey, Coos Bay, Oregon.

Sub-Committee No. 5 will deal with regulations for use of mine-rescue apparatus in metal mines. D. Harrington, mining engineer of the Bureau of Mines, Denver, Colo., will act as chairman. H. J. Rahilly, mining engineer, Anaconda Copper Mining Co., Butte, Mont., will also serve on this committee.

Additional names may be added to all sub-committees as occasion may require.

REFINERY STATISTICS FOR FIRST NINE MONTHS OF YEAR COMPARED

LOSSES were registered in the production, domestic consumption and exportation of kerosene during the first nine months of 1921, as compared with the same period of 1920. Losses were also noted in the case of gas and fuel oil. There was an increase in the production and domestic consumption of gasoline, with a decrease in exportation, and a decrease in the production, exportation and domestic consumption of lubricating oils.

The following table, prepared by H. F. Mason, petroleum technologist of the Bureau of Mines, shows the percentage of increase or decrease for the first nine months of 1921 as compared with the first nine months of 1920.

	Gasoline	Kerosene	Gas & Fuel Oil	Lubricating Oil
Production....	+10%	−16%	+13%	−17%
Imports.....	−17%	.....	.....	.....
Exports.....	−15%	−14%	+18%	−35%
Shipments to insular poss.	+33%	+21%	+19%	−01%
Domestic consumption....	+06%	−12%	+04%	−21%

COLORADO RIVER DEVELOPMENT TO BE CONSIDERED AT MEETING

FIVE representatives of the American Mining Congress have been appointed to attend a conference on the development of the resources of the Colorado River, to be held at Riverside, California, December 8, 9 and 10. They are President W. J. Loring; Bulkeley Wells, Denver; R. S. Billings, Kingman, Ariz.; George Dern, Salt Lake City, and Governor Emmet D. Boyle of Nevada.

Practically all of the governors of the eight southwestern states will be in attendance, and likewise representatives of the six thousand commercial organizations of Arizona, California, Colorado, Nevada, New Mexico, Oklahoma, Texas and Utah. Secretary Fall of the Department of the Interior and Director Arthur P. Davis of the United States Reclamation Service will be in attendance and President Harding and President Obregon of Mexico and the Governors of Sonora and Lower California will send personal representatives. There will likewise be strong delegations from the Mississippi Valley and Great Lakes regions.

Governor Thomas E. Campbell of Arizona is President of the Colorado River Development Association which has called the meeting. This organization is waging a fight for the development of the Colorado River power and irrigation resources, whose 1,800-mile course forms the spinal column of the southwest. The estimated development of this river will generate between 20,000,000 and 30,000,000 horse power of electrical energy and make approximately 15,000,000 acres of desert land fertile, opening an agricultural and industrial empire capable of sustaining an additional population of not less than 50,000,000 people.

Marshal Foch will be the guest of the convention on its opening day. Concurrent with this meeting will be the initial session of the Interstate Colorado River Commission recently created by act of Congress, upon which each state in the southwest has appointed one representative.

While Secretary Fall has tentatively announced that he will hold the session at San Diego about the same time, it is believed that he will hold his Colorado River hearing concurrently at Riverside, since it concerns the identical subject and will virtually duplicate the purpose of his hearing on a much larger and more comprehensive scale.

All the southwest has appealed to him to combine his hearing in order to save those at interest time and expense.

REDUCTION MILLS CATALOGUED

A LIST of reduction mills in the various western states has been compiled by Chas. G. Yale, V. C. Heikes and Chas. W. Henderson of the United States Geological Survey, and is being published by the United States Bureau of Mines for the benefit of the mining industry. The list supplements and brings up-to-date the report of an investigation made in 1912. The figures of daily capacity include those of the trade milling, tailings, cyanide, flotation and smelting plants. Lists for the following states have been bound separately: California, Oregon, Washington, Idaho, Utah, Montana, Nevada, Arizona. Lists for other western states will be published soon. Copies may be obtained by writing to the Bureau of Mines, Washington, or to the American Mining Congress.

COMMERCE DEPARTMENT MAKING COAL STOCK SURVEY

A COAL SURVEY will be made by the Department of Commerce during the next sixty days. The object is to determine the extent of coal stocks in the hands of consumers and the actual facts as regards coal wages. The purpose of securing the latter information is to form, if possible, a basis for arriving at a new wage scale to be effective when the present one expires April 1, and thereby to prevent a strike.

Questionnaires have been sent to wholesalers and retailers. A statement accompanying each questionnaire carried the following explanatory data:

"Many consumers of bituminous coal throughout the country will receive a questionnaire from the government at Washington inquiring as to their stocks of coal on November 1.

"The purpose of the questionnaire is to find out how much coal is on hand as the country enters the winter, in order that consumers and producers alike may make intelligent plans. Soft coal production up to October 1 was 112,000,000 tons behind last year and from 75,000,000 to 90,000,000 tons behind normal.

"The decrease is in part to be expected, because of a decline in consumption and in exports and it does not necessarily mean that consumers are unwisely burning up their reserves.

"But if there is any possibility that the above-ground reserves are below the safety line, the best way to settle the point, the government thinks, is to take account of stock and lay all the facts before the public.

"The information is also desirable to the public in view of the disturbance to the coal trade that may eventuate with the renewal of the coal miners' biennial working agreement at the end of March.

"It is hoped to complete the canvass and publish a preliminary report within 30 days."

It is known that the Department of Commerce is working to prevent a strike of coal mine workmen next April. The information now being sought and which will be embodied in the conclusions of the survey now being made will be the only information of its particular kind, and it is believed that it will be of great service in this connection. The department has asked for an appropriation of $40,000 to defray expenses of services it expects to be called upon to render in connection with the forthcoming adjustment of the bituminous scale.

WORLD'S COAL AND OIL STAKE AT ARMAMENT CONFERENCE

ALTHOUGH the oil question seems to be overshadowing the international coal situation in the minds of members of the American delegation to the arms conference, there are indications which lead to the conclusion that the coal deposits of Siberia, China and Japan will eventually come to occupy a prominent place in Far East discussions. The American Advisory Committee apparently has not asked government agencies for so thorough a compilation of coal data as it has requested of them in connection with the international oil situation. It has been definitely ascertained that the Bureau of Foreign and Domestic Commerce has not yet received such a request, although other agencies of the government are understood to have made studies of the situation, which would indicate that reports are to be submitted to the committee in at least a semi-official manner.

Close students of the situation are of the opinion that the importance of the coal deposits of western Asia as a factor in the international situation of the Far East is being clouded by the manner in which oil has recently been brought to the point where it is generally looked upon as the prime key commodity.

Japanese oil interests intend to demand participation in the fields of Netherlands East Indies on an equality with other non-Dutch capital, according to reports to the Commerce Department, which place the total production of these fields in 1920 at 2,365,320 tons. It is reported that the Koloniale Petroleum Mij., a subsidiary of the Standard Oil Co., has been granted only two of the 6,000 prospecting licenses for which it made application of the Netherlands East Indies Government.

ALASKA PROFITS FROM NATIONAL EXPOSITION OF MINES

BENEFITS of the national exposition of mines, held contemporaneously with the twenty-fourth annual convention of the American Mining Congress, were pointed out in a letter received by the Mining Congress from J. L. McPherson, manager of the Alaska Bureau of the Seattle Chamber of Commerce. The Alaska Bureau co-operated with the legislature of Alaska in sending the exhibit to Chicago, and Mr. McPherson attended personally. Upon his return from Chicago, he wrote the American Mining Congress in part as follows:

"I wish to take this opportunity of again extending my congratulations on the splendid exposition at Chicago. I do not believe there is any work that will be so beneficial to the mining industry as this yearly display of our great mineral resources and the means and methods of making them available.

"You may be assured of our hearty support in securing a larger and better exhibit for Alaska at your exposition next year. I hope it may be possible to develop an exhibit of placer mining in miniature, illustrative of all methods. It would, I believe, prove of the greatest interest."

EXPOSITION ATTRACTION TO BE SHOWN IN OTHER PLACES

UTAH'S EXHIBIT at the twenty-fourth annual convention of the American Mining Congress is considered so high class and so representative that it will be preserved in its entirety. The Salt Lake Commercial Club has made the announcement that it will be shown at state fairs and perhaps also as other expositions in the future.

The Salt Lake Commercial Club is taking the lead in a movement for advertising Utah's mineral resources. It has recently issued a booklet entitled, "Utah's Mineral Wealth." It maintains a standing committee on mining. This committee is planning meetings to be held at frequent intervals in the future. Mining operators, as well as engineers and others especially interested in the industry, will be invited to deliver addresses, and the meetings will be open to the public.

The exhibit which attacted so much attention at Chicago will be kept in the Utah state capitol when not in use at fairs and other expositions.

OIL AND METAL MARKETS AFFECTED BY CONFERENCE RESULTS

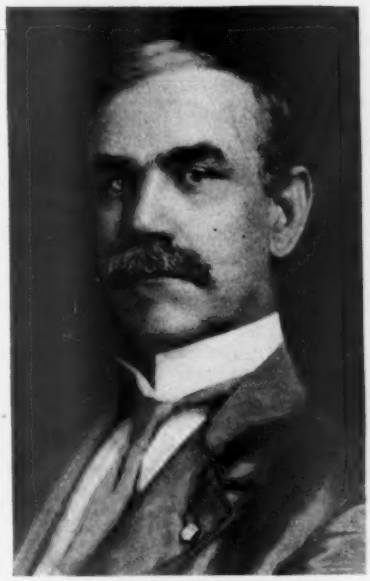
REDUCTION in the fleets of the powerful nations will entail a diminution of fuel oil consumption, and in the opinion of some of the experts attending the Washington conference market prices of petroleum would be affected. In 1920 the American navy consumed 8,000,000 barrels of fuel oil, or about three weeks' output of the domestic refineries.

The Thread of the Fabric

I. Senator Reed Smoot

A Series of Scrutinies Directed Toward Notable Legislative Personalities

By IRA L. SMITH



SENATOR REED SMOOT

AS THE SPECIAL SESSION of Congress tumbled into its grave, Reed Smoot, the senior senator from Utah, probably was convinced that it is next to impossible to teach new tricks to a flock of old legislative dogs. The Senator made a brave effort during the summer to get them to jump through the sales tax hoop; but they were afraid to lift their feet from well-known political grounds.

Now that the smoke created by the tax bill battle has cleared away, it is worth a minute or two to unleash the dogs of analysis, turning them upon the brain that proposed the repeal of practically every existing national tax law.

It took the Smootian head to rig up such a plan for sending the old on its giddy way and supplanting it with a revenue plan that is new, so far as actual use is concerned, although somewhat worn from lying around the shop. Scarce another legislative think-tank would have been more ideally adapted to the job; not because the brain that sits atop the Senator's tall frame grinds out other than conservative thoughts, but for the simple reason that only a slave to detail and one who kowtows eternally before the altar of the statistical god could build the basis for such a proposal and be able to defend it.

Coming into the Senate astride a tussle, Mr. Smoot has been right in the center of the legislative dough mixing for many years. Arriving on Capitol Hill with not a great deal of inherited political power, he has set up a house unto himself that makes many an opponent's eye roll in fine envy.

He is almost as abrupt as the end of a road. This trait at times threatens to sue for divorce from the type of easy-going understanding that one glimpses in the law-making sphere. But old Dame Nature has compensated everything: she has seen to it that the person with a snappy mind that chops things off short and throws them away, is, in the very process of the chopping, given an alertness that always has its head up and its eyes open.

In the committee room, the witness who sees Mr. Smoot seated at the table, carnivorous for details, may safely write home to the folks that he has a funny feeling. For the dynamo that walked out of the west is certain to launch an upsetting quiz just when the testimony is flowing smoothly as book-agent's gab. You can't put anything over Mr. Detail.

One can hardly conceive Mr. Smoot in the role of getting familiar. Although he is characterized as one of the "old guard", he seems to exude that precise sort of thing that keeps you from calling your boarding house lady by her first name. To cite a contrast, I listened to a pair of "progressives" jump all over each other at a Senate committee hearing one day, only to hear one of them say to the other, after adjournment, "Bob, give me a helping of tobacco."

Reed Smoot tried to pull an oar with his sales tax plan. Sitting in midships as ballast, he had carefully gathered details, waiting for his chance to land high and handsome atop a successful scheme.

His presentation was strikingly clear, being so simple that even women and children might understand. A one-syllable tax plan, one might say.

But thoughts that are carefully laid out on the bottom of the boat cannot be watched so closely when the wielding of an oar, or application of any sort of driving force, steals attention from the methodical marshaling of facts.

If Mr. Smoot could learn from a vaudeville juggler the trick of mechanical movement; if he could keep his eyes from holding hands with his thoughts; if his analytic brain pan could digest the unexpected as well as it does the things which have been well-masticated mentally; if the senior Senator from Utah could do these things he would stand ace high. To quote my friend, Sadie, the ribbon counter girl, "He'd knock them cold."

TARIFF and taxation, the two paramount issues before Congress, both of vital importance to the mining industry, have been the chief subjects of discussion at the Capitol.

The Senate on November 8 passed the Revenue Bill and conferees were appointed by the House and Senate to consider Senate amendments to the House bill. There were over 800 Senate amendments to adjust. The conferees completed the adjustment of the Senate amendments in sufficient time for the passage of the bill before adjournment and the bill has been signed by the President. The important changes made in the House bill by the Senate include an increase of the corporation tax to 15 percent; reduction of the minimum surtax rate to 50 percent; repeal of excess profits and transportation taxes effective January 1, next. In the final debate the Senate rejected a 3 percent sales tax by Senator Smoot. It adopted an amendment by Senator Lenroot, Wisconsin, providing that net gain on sale of stock of corporations shall be taxed at the full income normal and surtax rates. Reversing its former action, the Senate eliminated the tax of $2 per $1,000 on the fair value of capital stock in excess of three million dollars, leaving a flat rate of $1 per $1,000. The Lodge amendment, previously agreed, permitting holding companies, in computing their capital stock subject to tax, to deduct the value of capital stock owned in subsidiary companies, was also stricken out. The purpose of the Lodge Amendment was to prevent double taxation and by its elimination, holding companies will be liable to tax on the full value of their capital stock, even though such value represents holdings in subsidiary companies which are also required to pay the tax. An amendment by Senator Walsh, Mass., was adopted, imposing a tax of 1% on gifts valued between $20,000 and $50,000, with graduated rates up to 25% on gifts in excess of ten million dollars.

The Senate passed the Emergency Tariff Bill which provides that the Emergency Tariff act remain in force until otherwise provided for by law and continue in effect until the permanent tariff bill is enacted. Previously the Emergency Tariff would expire November 27.

An amendment to the Tax Bill adopted by the Senate is that exempting gold mining companies from excess profits tax in 1917. Gold mining properties were exempted under the 1918 law but not included in the 1917 law. This amendment was finally adopted and included in the Revenue measure, and a considerable number of gold mining companies will be entitled to refund from the Bureau of Internal Revenue.

The War Minerals Relief Bill which has been before Congress for some time passed the House by a vote of 177 to 137. The bill which the House passed on November 16, is the Shortridge measure which has been reviewed previously in the Mining Congress Journal. The bill was amended on the floor to include claims, notice of which had been made in writing and the legislation is aimed to give the Secretary of the Interior authority to review all cases of dissatisfied claimants. Conferees were appointed in the House and Senate and the conference report was adopted before the adjournment of the present session and the bill has been signed by the President.

Senator Shields of Tennessee, introduced an amendment to the Tariff Bill, proposing a duty on potash for five years graded down from 2½ cents per pound the first two years; 2 cents per pound the third year; 1½ cents per pound the fourth year; one cent per pound the fifth year and thereafter free of duty.

The Senate has passed a bill authorizing the leasing for mining purposes of unallotted lands on the Fort Peck and Black Feet Indian Reservations in Montana. It also has passed a bill appropriating four million dollars for the completion of the Alaska Railroad System between Seward and Fairbanks.

The Senate Finance Committee has again resumed hearings on the Tariff Bill. It is understood that already more than 400 requests for hearings on tariff revision are pending before this committee. The committee is now hearing wool and agricultural interests and will later hear representatives on all of the remaining schedules and will not bar additional data on schedules already heard.

Speaker Gillette of the House introduced a bill designed to prevent railroad strikes and to reduce railroad rates. It proposes a joint capital and labor partnership in the operation of railroads and joint earnings to be divided equally between the two parties. The bill proposes that the Interstate Commerce Commission shall lower rates on coal, lumber, building materials, foreign products, and other necessaries, so that producers may reach markets at reasonable rates.

Representative Mondell favored an amendment of the law to permit land owners to allow prospectors to inspect the land for mineral content. He pointed out that a prospector might believe there was coal or oil on the land but would not care to go to the trouble of obtaining a permit but would prefer making an arrangement with the owner.

The legislation to prevent discharge of oil and other waste in navigable waters, known as the Pollution Bill, which is before the House Committee on Rivers and Harbors, will resume hearings December 7. Representative Appleby of New Jersey has introduced a resolution in this connection, requesting the President to call a conference of leading nations to consider amendments to the maritime laws to control pollution of navigable waters by coal burning and oil carrying steamers.

The Frelinghuysen Coal Stabilization Bill came up in the Senate on November 9, when that body was considering legislation under the calendar Wednesday rule, but its consideration was deferred on objection of Senator Sutherland of West Virginia.

Senator King of Utah has introduced a bill transferring national forests from the Agriculture Department to the Interior Department.

The following bills of importance to the mining industry have been introduced:

REVENUE

S. 2687. Introduced by Mr. Pomerene (Court of Appeals). The bill authorizes the creation of a United States Court of Internal Revenue Appeals, which shall consist of a judge and four associate judges, each to be appointed by the President. This court is to be a court of record and is to exercise such powers, to establish all rules and regulations for the conduct of the business of the court. It shall have the power to review any decision or matter within its jurisdiction, and may affirm, modify, or reverse the same, and remand the case with such orders as may seem to it proper. It shall exercise exclusive appellate jurisdiction to review by appeals, final decisions by the Commissioner of

IMPORTANT BILLS REVIEWED IN THIS ISSUE

REVENUE:
- **S. 2687: Mr. Pomerene (Creation Court of Internal Revenue Appeals.)**
- **S. J. Res. 136: Mr. King (Conference to consider questions relative Federal and State taxation.)**
- **H. R. 8245: Mr. Smoot (Amendment Revenue Act, capital stock.)**
- **H. R. 8245: Mr. Frelinghuysen (Amendment Revenue Act, 1918)**

ANTI TRUST:
- **S. 2715: Mr. Watson (Amending existing laws against unlawful restraints and monopolies)**

TARIFF: (Potash)
- **H. R. 7456: Mr. Shields (Amending Fordney Bill)**

WAR MINERALS:
- **S. 843: Mr. Shortridge (Amending War Minerals Relief)**

ALASKA:
- **H. R. 8442: (Amendment Alaskan Railway Bill)**

DECIMAL SYSTEM:
- **S. 2614: Mr. King (Establishment standard decimal system)**

RAILROADS:
- **H. R. 8331: Mr. La Follette (Amending Transportation Act)**

MISCELLANEOUS:
- **S. 2655: Mr. King (To permit the location of mining claims within national parks)**

Internal Revenue or the Secretary of the Treasury in all cases as to the construction of the law and the facts respecting the assessment and collection of the internal revenues; all appealable questions as to the jurisdiction of the Commissioner and the Secretary of the Treasury as to the laws and regulations governing the collection of internal revenue. The judgment and decrees of this court shall be final in all such cases with the exception that in any case in which the judgment or decree of the court is made final by the provisions of the bill, it shall be competent for the Supreme Court, upon the petition of either party filed within sixty days after the issue by the Court of Internal Revenue Appeals of its mandate upon decision in any case in which there is drawn in question the construction of the Constitution of the United States, or in any case when the Attorney General of the United States shall have filed with the court a certificate to the effect that the case is of such importance as to render expedient its review by the Supreme Court such case to be certified to the Supreme Court for review and determination. Section 9 provides that after the organization of this court no appeal shall be taken or allowed from the Commissioner of Internal Revenue or the Secretary of the Treasury to any other court.

H. R. 8245. Proposed by Mr. Smoot (Capital Stock). This bill amends the Revenue Act by proposing that such amendments be made as will permit a tax of 10 percent of the excess amount in the case of any corporation, the net income of which for the taxable year is less than 8 percent of the fair average value of its capital stock for the year ending on June 30. The bill strikes out on page 167, beginning with line 20, to and including page 175, and provides under Title IX a new section to be a business sales tax, which provides that in addition, to all other taxes there shall be levied upon every person carrying on a business involving the sale of any goods, wares, or merchandise, manufactured or purchased by such person for sale, a tax equal to one-half of one percent of the amount by which the gross sales of such goods exceed the sum of $6,000 in any calendar year. The production of coal, fuel oil, and other minerals shall constitute manufacture under this act. Where the full amount of $6,000 yearly is not claimed in computing the tax due, the part not so claimed shall be deducted in computing the tax due for any succeeding month until the total exemption for any calendar year shall equal $6,000.

S. J. Res. 136. Introduced by Mr. King; referred to the Committee on Finance. The resolution authorizes the President to invite the governments of the several States of the Union to appoint representatives to confer with representatives to be appointed by the President, to consider the relation between Federal and State Taxation; co-operation between Congress and the States in the laying and levying of taxes; the matter of duplicating and conflicting Federal and State taxes upon inheritances, successions, and incomes, and means for the accommodation of such conflicts; and the question of the allocation and distribution of the revenues derived from inheritance taxes as between the Federal Government and the several States. Section 2 of the resolution appropriates the sum of $20,000 to defray the expenses of such conference.

H. R. 8245. The following is intended to be a proposed amendment by Mr. Frelinghuysen: On page 78, after line 20, insert a new section to read as follows: Sec. 229. That in the case of the organization as a corporation within four months from the passage of this act of any trade or business in which capital is a material income-producing factor, and which was previously owned by a partnership or individual, the net income of such trade or business from January 1, 1921, to the date of such organization may at the option of the individual or partnership be taxed as the net income of a corporation is taxed under Titles II and III; in which event the net income and invested capital of such trade or business shall be computed as if such corporation had been in existence on and after January 1, 1921, and the undistributed profits or earnings of such trade or business shall not be subject to the surtaxes imposed in section 211, but amounts distributed on and after January 1, 1921, from the earnings or profits of such trade or business accumulated after December 31, 1920, shall be taxed to the recipients as dividends; and all the provisions of Titles II and III relating to corporations shall so far as practicable apply to such trade or business: Provided, that this paragraph shall not apply to any trade or business, the net income of which for the taxable year 1921 was less than 20 percent of its invested capital for such year: Provided further, that any taxpayer who takes advantage of this paragraph shall pay the tax imposed by section 1,000 of the Revenue Act of 1918 as if such taxpayer had been a corporation on and after January 1, 1921.

ANTI TRUST

S. 2715. Introduced by Mr. Watson. This bill amends the Anti-Trust Law by providing that after two years from the approval of the act no common carrier engaged in commerce shall have any dealings in securities with another corporation, firm, partnership, etc., when the carrier shall have upon its board of directors or as its president, manager, or as its purchasing or selling officer, any person who is at the same time a director, manager, etc., or who has any substantial interest in, such other corporation, etc., unless and except such dealings shall be with the bidder whose bid is the most favorable to such common carrier, to be ascertained by competitive bidding under regulations to be prescribed by rule or other wise by the Interstate Commerce Commission. Any person who directly or indirectly attempts to do anything to prevent anyone from bidding or shall do any act to prevent free and fair competition among the bidders shall be punished as prescribed in this section in the case of an officer or director. It is further provided that any one having such transaction shall within thirty days after making the same file with the Interstate Commerce Commission a full and detailed statement of the transaction showing the manner of the competitive bidding, who were the bidders, and the names and addresses of the directors and officers of the corporations and the members of the firm or partnership bidding; and whenever the commission shall, after investigation, have reason to believe that the law has been violated in and about the said transactions it shall transmit all papers and documents and its own views or findings regarding the transaction to the Attorney General. A fine of $25,000 is imposed upon anyone violating this section and every director, agent, etc., who shall have knowingly voted for or directed the act constituting such violation or who shall have aided or abetted in such violation shall be deemed guilty of a misdemeanor and shall be fined not exceeding $5,000 or confined in jail not exceeding one year, or both, in the discretion of the court. Mr. Crowther has introduced a bill similar to the above under the House number 8958.

TARIFF (Potash)

H. R. 7456. The following is an amendment by Mr. Shields to the Fordney Tariff Bill, which provides that for a period of five years beginning on the day following the passage of this act there shall be levied, collected, and paid on the actual potash (potassium oxide) content of all the foregoing, a duty of 2½ cents per pound for the first two years; 2 cents per pound for the third year; 1½ cents per pound for the fourth year; and 1 cent per pound for the fifth year: Provided further, that thereafter the said potash content shall be free of duty.

WAR MINERALS

The House amended the Shortridge Bill, S. 843, which provides for the relief in the

case of war minerals producers by providing that section 5 of the act approved March 2, 1919, entitled "An Act to provide relief in cases of contracts connected with the prosecution of the war, and for other purposes," be amended as follows: Add to the first paragraph of section 5 the following proviso: Provided, that all claimants who, in response to any personal, written, or published request, demand, solicitation, or appeal from any of the Government agencies mentioned in the act, in good faith expended money in producing or preparing to produce any of the ores or minerals named therein and have heretofore mailed or filed their claims or notice in writing thereof within the time and in the manner prescribed by the act, if the proof in support of said claims clearly shows them to be based upon action taken in response to such request, demand, solicitation or appeal, shall be reimbursed such net losses as they may have incurred and are in justice and equity entitled to from the appropriation in the act. If in claims passed upon under the act awards have been denied or made on rulings contrary to the provisions of this amendment, or through miscalculation, the Secretary of the Interior may award proper amounts or additional amounts, which shall be paid from the unexpended portion of the appropriation carried in the act. This bill as amended passed the House November 16. It had previously passed the Senate on June 17. It has now gone to conference.

ALASKA

H. R. 8442. This bill is an amendment to the Alaskan Railway Bill and provides that in order to complete the construction and equipment of the railroad between Seward and Fairbanks, together with necessary sidings, spurs, and lateral branches, there is authorized to be appropriated, in addition to all sums heretofore appropriated therefor, the sum of $4,000,000, to be immediately and continuously available until expended.

DECIMAL SYSTEM

S. 2614. Introduced by Mr. King; referred to the Committee on Manufactures. The bill provides for the establishment of a standard decimal system of weights and measures. It is similar to other bills introduced for this purpose which have heretofore been reviewed.

RAILROADS

H. R. 8331. The following is an amendment which Mr. La Follette intends to propose to the Transportation Act of 1920: That no order of the Interstate Commerce Commission, heretofore or hereafter made, requiring, or purporting to require, any carrier to establish, put in force, or maintain any rate, fare charge, or classification applicable to the transportation of passengers or property between points wholly within one State shall be of any force or effect whatsoever so far as respects such transportation: Provided, that traffic which does not pass beyond the border of the State within which it originates shall be conclusively deemed to be wholly within that State within the meaning of this section.

MISCELLANEOUS

S. 2655. Introduced by Mr. King; referred to the Committee on Public Lands and Surveys. (To permit the location of mining claims within national parks). The bill provides that hereafter all public lands within a national park of the United States shall be open, under such regulations as the Secretary of the Interior may prescribe, to the location of mining claims and the working of the same, in the same manner and subject to the same conditions provided by law for the location of mining claims and the working of the same within the Crater Lake National Park, established by the act entitled "An act reserving from the public lands in the State of Oregon, as a public Park for the benefit of the people of the United States, and for the protection and preservation of the game, fish, timber, and all other natural objects therein, a tract of land herein described, and so forth," approved May 2, 1902, as amended.

BUREAU OF MINES INVESTIGATIONS

A STUDY of the heat treatment of cast non-ferrous alloys will be made at the Pittsburgh station. The annealing of cast non-ferrous alloys for the release of casting strains and the improvement of physical properties with special reference to aluminum will be conducted. The work will be under a co-operative agreement with a commercial firm, and will be under the supervision of R. J. Anderson, metallurgist of the Bureau of Mines.

At the Northwest Experiment Station an investigation is to be undertaken regarding the preparation of super-refractories by melting and treating clays in the electric furnace and preparing from these products refractory materials, chiefly brick. This work will be in co-operation with the University of Washington, and will be conducted by C. E. Williams, superintendent of the Northwest Experiment Station, C. E. Sims, electrometallurgist, and Hewitt Wilson, ceramist, of the Bureau of Mines staff, and A. Lee Bennett, fellow of the University of Washington.

The Columbus station, known as the Ceramic Station, has practically completed its investigation of the white clays east of the Mississippi River. The study thus far indicates that there are comparatively few high grade clays in Ohio, and that these few come from three different districts, namely, the Dover, Moxahala and Sciotoville. The results also indicate that none of the clay samples tested were similar to English china clay. During the clay testing work a new mercury volumeter and an oxygen-acetylene high-temperature furnace were developed.

An investigation of the electrothermic smelting of zinc and the condensation of zinc vapor is being made by the Mississippi Valley station, Rolla, Mo., in co-operation with the Missouri School of Mines and Metallurgy. Another investigation is to be undertaken at Rolla and will have for its purpose the determination of whether the zinc ores of Hancock County, Tenn., are possible of concentration. This investigation will be made in co-operation with the Tennessee Geological Survey. George J. Salmon and Will H. Coghill, metallurgists of the Bureau of Mines will be assisted by three Tennessee scientists, M. H. Thornberry, state research metallurgist, Wm. Kahlbaum, chemist, and Elmer List, fellows in ore dressing.

At the North Central station, Minneapolis, a critical study of analyzing iron ores of the Minnesota mines has been started. It has been suggested by several operators that the laboratory methods used at other mines in the determination of different elements in iron ores be compared, and this suggestion will be followed in the investigations which the bureau is now conducting.

Tar emulsions in Water-Gas Sets can be largely prevented by proper manipulation. This is the conclusion reached at the end of an investigation made under a co-operative agreement between the U. S. Bureau of Mines and the Illinois State Geological Survey, the investigation having recently been concluded at the University of Illinois, Urbana, Ill. A method was developed for determining rapidly the percentage of water in tar emulsions.

W. W. Odell, illuminating Gas Engineer, has conducted experiments for the Bureau of Mines at Davenport, Iowa, the results of which indicate that mixtures of some mid-western coals and coke give satisfactory service as fuel in water-gas sets in substitution for the high grade eastern coke generally used in that section. A full report of Mr. Odell's investigation will shortly be published by the Bureau of Mines.

Additional experiments on the use of central district fuels in water-gas sets have been conducted by W. A. Dunkley at Joliet and Murphysboro, Ill. Many difficulties encountered in using coal have been gradually overcome. A report of these experiments is now being prepared.

A series of tests on the effects of using steam in steaming horizontal gas retorts has been made by the Bureau of Mines, in co-operation with the Illinois State Geological Survey, at Mendota, Illinois, with coals from the Elkhorn district of Kentucky and from Franklin County, Ill. With a coking time of six to eight hours, approximately 5 percent more heating value in the gas per pound of coal was obtained.

At the Pittsburgh experiment station, investigations relating to the purification of city gas are being continued in co-operation with the purification committee of the American Gas Association. A. C. Fieldner, chairman of the committee, and superintendent of the Pittsburgh experiment station, is in general charge of the work. At this station, A. R. Powell and G. S. Scott are working on the development of improved methods for determining the efficiency of iron oxides for gas purification. A bibliography on gas purification is in preparation.

At the Pittsburgh station, co-operative work has been conducted with the Bureau of Standards relative to the quantity of carbon monoxide produced when natural gas is burned in house-heating appliances under different burner adjustments.

An investigation has been conducted at Pittsburgh by the Bureau of Mines to determine the quantity of nitrogen produced when gases are analyzed by the slow-combustion and the explosion methods. The tests indicate that negligible amounts are produced by the slow-combustion method when properly conducted and none by the explosion method when air is used as the oxygen supply, although appreciable quantities are formed when mixtures of air and oxygen are used.

STRIKE INEVITABLE; SHOW-DOWN MUST COME SOONER OR LATER

By C. H. Farrell

BEGINNING with the Adamson Law in 1916, and following thereafter with a series of so-called compromises, the various railroad labor difficulties have been quieted for the time being. We have just witnessed another compromise which was hailed broadcast as a settlement of the strike which was going to paralyze industry in this country. It is not a settlement of course, no more than the Adamson Law was a settlement, nor the various concessions made by the Director General were settlements. We have simply postponed again the inveitable show-down which must come sooner or later if we are to have peace in the railroad world. Regardless of who is right and who is wrong, and regardless of the fact that a nation-wide strike would cause a great deal of suffering and inconvenience, we nevertheless are continually fooling ourselves into the belief that something will turn up and dismiss the whole problem, but such is probably not the case and if a showdown, which this writer does not believe in, is necessary surely there was never a better time for it than during the past month. This is not intended to mean that the railroads were surer of victory then than they have ever been before or will ever be again, but it is intended to mean simply that the public could have suffered through a strike better than a few months in the future, when we hope there will be a full resumption of business conditions, employment for all, and a much larger flow of traffic.

We are told that the unions were striking because the United States Railroad Labor Board had ordered a reduction in their wages of about half of the amount which it gave to them in the summer of 1920. Such is not the case. The reductions granted by the Labor Board would have been given only passing notice by the unions were it not for the fact that they are going to fight to the last ditch to save, as far as possible, the working agreements entered into with them by the Director General of railroads. These agreements are really at the bottom of all the railroad trouble. They have made it possible for the railroad employes in many ways to earn a much larger wage than they ever did before, and they have compelled the railroads and the United States government during federal control to pay large amounts of money to men for work that was never done. It is for these privileges that the unions will fight hardest, and sooner or later we are going to be forced to submit to whatever they may choose in the form of coercion unless the heads of the various unions change their attitude within the next few months.

In passing, one cannot help but feel that it would have been better to have allowed these people to go ahead with their coercive plans, for the purpose of learning whether the public is to be secure in its enjoyment of peaceful transportation or not. If every decision of the only lawful tribunal in this country that can pass upon wage questions is to be contested by the party which it does not favor, then we are in truth departing from law and order and the sooner we know it the better. The strike has not been settled. It merely has been postponed again, for about the 'steenth time beginning with the Adamson Law.

FREIGHT RATE REDUCTIONS ON MINE PRODUCTS

THE CARRIERS have announced, from time to time in the past few months, that conditions made impossible any general reductions in rates without subsequent reductions in wages. This in spite of the fact that the operating ratio for September of this year was very close to normal, the carriers' explanation for that being that they are neglecting their maintenance. The increased rates allowed by the Interstate Commerce Commission have been in effect over a year and the tonnage in this country has suffered very noticeably during that period. A scale of rates that was intended to earn for the carriers approximately six percent upon the value of $18,900,000,000, which was fixed by the commission for rate-making purposes, has earned for them during the first nine months of this year only 2.9 percent. August showed an earning of 5 percent, and September showed an earning of 4.6 percent, but the carriers stoutly maintain that they have been able to make this showing only by neglecting the upkeep of their properties. If this is true the shipper can find little comfort in it, because in the past when business has been on the boom one thing which industry has required more than any other is the movement of its products. Were we to come out of the present slump and start in earnest a business revival of real proportions we would soon see, if our carriers were unable to handle the traffic, the price which the public had actually paid without knowing it.

The carriers in all of their propaganda and in all of their arguments practically insist that the high level of rates plays only a minor part in the diminished movement of traffic. They have contended from the very beginning that conditions following the world war have been and are responsible for the decrease in tonnage and they do not profess to think that a lowering of the rates will mean any appreciable increase in the movement of commodities unless other conditions are also remedied.

Nevertheless, there have been some reductions agreed to from time to time, and if there is merit in the contention that reduced rates will move more traffic the figures will reflect that fact in the near future. The last announcement made by the roads is to the effect that there will be an immediate reduction of 10 percent in carload rates on farm products throughout the entire country except on that traffic moving wholly within New England. These reductions on farm products will include the reductions on live stock, grain, grain products and hay, already made or provided for.

In addition to this general reduction, the carriers have made several others involving, they estimate, a reduction of their revenues of from $175,000,000 to $200,000,000 annually. Commissioner Lewis, of the Interstate Commerce Commission, has written to Con-

gressman Sanders and explained in detail these reductions. A few of the larger ones of particular importance to the mining industry are as follows: 1—A reduction of 28 cents per ton on coal from Pennsylvania, West Virginia, Ohio, Kentucky, and other eastern producing points, to ports on Lake Erie when destined for movement by lake to points in the northwest. 2—Reductions varying from $1.98½ to $7.25½ per ton in the rates on smelter products from Colorado, Wyoming, Utah and New Mexico, to points in Central Freight Association territory east of Chicago, Eastern Trunk Line points and a few points in eastern Canada. 3—Reduction of 25 percent in the rates on export iron and steel from Chicago and Central Freight Association points to the eastern seaboard, with relative adjustments to south Atlantic coast ports. 4—Reductions in the rates on iron ore in eastern territory which eliminate all of the increases allowed by the commission in the general advance and which it is estimated will amount to $5,000,000 per year. There have been reductions also in pig iron from southern producing points to the Pacific coast, in smelter products from Utah to the Pacific coast, in ore to smelter points in western territory, and in copper products from upper Michigan producing points to Atlantic ports, iron and steel articles, bars and rods, from Alabama, Tennessee, and Kentucky producing points to gulf ports on traffic destined to the Pacific coast via the Panama Canal.

NEW HEARING ASKED IN GOLD HUNTER CASE

IN CONSIDERING a complaint brought by the Gold Hunter Mining & Smelting Company the Interstate Commerce Commission late this summer decided that shippers of lead ores and concentrates from Sunset and Mullan, in the Coeur d'Alene mining district of Idaho, to Salida, Colorado, were entitled to have their rates made on the net value basis in effect at Pueblo instead of on the gross value basis then being applied at Salida. The waiver of undercharges on about 450 cars which the carriers were attempting to collect on the gross value basis was also authorized by the commission.

The Director General has filed a petition with the commission asking for a reconsideration of the report and a finding that both the gross value rule and the charges resulting therefrom and the Salida rate were neither unreasonable nor unduly prejudicial and that the undercharges resulting from the application of the gross value rule must be collected. The commission now has under advisement the Director General's petition, and will undoubtedly announce within the next few days whether the matter is to remain as decided or is to be reopened for further consideration.

EARNINGS—The net operating income of all the railroads in the United States for September was $87,174,000, an increase of 9.4 percent over the same month last year but $26,209,000 short of the amount expected from the increased rates of a year ago. On the basis of the tentative valuation fixed by the commission the carriers earned, during September, at the annual rate of return of 4.6 percent. During the month the operating revenues were 19.6 percent less than last year and operating expenses decreased 26 percent. Taking the nine months of this year the carriers figure a net operating income of $391,495,000, or at the annual rate of return of 2.9 percent. In the eastern district the decrease in operating revenues was 24.4 percent, and in operating expenses 29.8 percent, leaving a return of 4 percent. In the southern district operating revenues decreased 19.2 percent and operating expenses decreased 24.7 percent, leaving a rate of return of 4.5 percent. In the western district operating revenues decreased 14.1 percent and operating expenses 21.7 percent, leaving a rate of return of 5.2 percent. Thirty-six railroads had operating deficits in September compared with fifty-six in August. The carriers have issued a statement regarding these figures in which they claim that there was a decrease in maintenance expenses compared with September of a year ago of $52,397,000, about one-third of which represents reduced wages, leaving a reduced maintenance of $35,000,000. If maintenance work had been done at the same rate as in the previous year the net operating income would have been $50,000,000, or at the annual rate of return of 2.7 percent. For maintenance of way and structures the decrease under September of last year was 23.3 percent, while for maintenance of equipment it was 22.7 percent.

MINES TO BENEFIT FROM BEAR RIVER DEVELOPMENT

ADDITIONAL POWER for mining purposes will be provided by the development of the Utah Power and Light Company on Bear River in Southeastern Idaho, a preliminary permit for which has been issued by the Federal Power Commission. The project will impound water for both irrigation and power, and will complete the utilization of the Bear River for power purposes at all practicable points from Bear Lake to Great Salt Lake. The development will make the river one of the most completely utilized streams for power and irrigation purposes in the west.

The completed project will add 21,500 horsepower of hydroelectric energy to the generating capacity of the company's system, now capable of developing about 165,000 horsepower, and will be connected with the big main transmission system now operating at 130,000 volts, extending from Grace plant, in Idaho, to Salt Lake City, a distance of 134 miles, and supplying a population of 300,000 with power, much of which is used in mining and manufacturing. This additional development will give added reliability in power supply and will serve to steady some of the company's smaller plants located on other streams having variable flow.

PITTMAN ACT IS SAFE

SENATOR Key Pittman, author of the Pittman Act, is convinced that the measure will not be repealed. After a recent visit to his home in Nevada he made the following statement:

"I am confident the future of silver is safe. The Pittman act will never be repealed. What little opposition there was a short time ago to the purchase of domestic silver at $1 announce by the United States treasury department was dying out as a result of intelligent opposition on the part of engineers and mining men all over the country."

"I believe the fund established under the Pittman act will be perpetual, inasmuch as before the entire amount of white metal sold to Great Britain during the war had been purchased the price of foreign silver will exceed the set price of $1 an ounce.

"As soon as this is the case the purchase of United States silver by the government will automatically cease and domestic stocks of metal diverted to Europe and the Orient. Foreign demand with domestic consumption would be ample to insure the existence of the fund created by the Pittman act for many years as soon as conditions in Europe return to normal."

CALIFORNIA OIL STRIKE SETTLED

IN ANNOUNCING the settlement of the California oil strike the Department of Labor reported that:

"An adjustment of the strike affecting 6,500 employes of the Doheny, Shell and other oil companies of California has been effected. This settlement insures peace in the oil industry in that state and obviates a spread of the trouble which appeared imminent. A noteworthy incident of the settlement was the readiness of the men to accept the Department's suggestions."

OIL SHALE OPERATIONS

THE LANDOFFICE reports that several citizens of Colorado have made application during the past two months for patent to oil shale placer claims in the Garfield County, Glenwood Springs, Colo., land district. Considerable activity has been going on within the oil shale areas in Rio Blanco and Garfield counties. The Ventura Consolidated Oil Fields Company and representatives of the Pure Oil Co. who have contracted for a large acreage of oil shale placer claims have been using a diamond drill proving up a lot of the lands. Three diamond drill holes have been put down to a depth of 800 feet and a rich quality of oil shale is reported developed.

OIL AND GAS PERMITS

DESPITE the record number of oil and gas cases handled by the General Land Office in September, a great many old cases still await adjudication, numerous conflicts and other complications slowing down action. More cases were finally disposed of during September than in any other month, the total of 891 showing a gain of 379 over new cases received. There were 512 new applications received and 546 permits issued, and 345 applications were finally rejected.

AFTERMATH OF THE CONVENTION

"PRESIDENT HARDING has made an important suggestion to the American Mining Congress in asking its co-operation toward devising a plan for the uniform production of coal and making this vital necessary of life available at all periods of the year by robbing it of its seasonal qualities."—*Washington Post.*

"THE ALASKA EXHIBIT at the International Mining Exposition of the American Mining Congress, which closed last Saturday at Chicago, received 'major attention' and the favorable comments caused by the exhibit but emphasizes the necessity of extensive educational work on Alaska, according to telegraphic advices received today by Governor Scott C. Bone from J. L. McPherson, secretary of the Alaska Bureau of the Seattle Chamber of Commerce. Mr. McPherson attended the exposition and gave a great deal of attention to the Alaska exhibit.

"The exhibit, with the exception of certain articles supplied by the Alaska Bureau of the Seattle Chamber of Commerce from its own collection to fill out the collection at Chicago, will be returned to Juneau and placed in the Alaska Museum. It will be thus available for other expositions in the future."—*Juneau (Alaska) Empire.*

"MINING CONGRESS convention was great success—Notable display of mine machinery."—*Skillings' Mining Review.*

"THE twenty-fourth annual convention of the American Mining Congress was one of the most successful in its history, and came at a time when American industry, in the face of world-wide adjustments, was confronted with problems of vital significance. Delegates from thirty-nine states, Alaska and Mexico, gathered in Chicago to plan for the future prosperity of the mining industry. It was a working convention in every sense of the word, and every morning, afternoon and evening of the entire week were spent by the delegates in the discussion of such serious problems as the relationships between the railroad and the mining industries, the legal responsibility of labor unions, the benefits or disadvantages of co-operative organizations through the modification of the Sherman Anti-Trust Law, the proper protection of our home industry, the establishment of wise methods of taxation, the increased utilization of metal products, and the development of American interests abroad, as well as many other questions of nation-wide importance. At no time have the economic and business functions of the mining industry as a whole been so important as at the present, and the function of the American Mining Congress was most effectively brought out at the meetings."—*Arizona Mining Journal.*

"UTAH'S EXHIBIT at the International Mining Exposition, in connection with the annual convention of the American Mining Congress, was distinctly different from any other exhibit, and was one of the striking features of the display at the Coliseum.

"The exhibit was unquestionably the most effective at the exposition."—*Eureka (Utah) Reporter.*

"THOSE engaged in the mining industry should be greatly encouraged by the message sent by President Harding to the recent annual convention of the American Mining Congress. Much of the latter is devoted to the problem that confronts the coal mining industry, and in which Utah, with the greatest known deposits of coal in the world, and where the industry is certain to constantly expand as the years progress, should be most vitally interested."—*Ira C. Tichenor in Salt Lake Telegram.*

"INCREASING INTEREST is evident in eastern business circles in the mineral industry of Utah and other western states, according to A. G. Mackenzie, secretary of the Utah Chapter of the American Mining Congress, who has just returned from the Chicago convention. Mr. Mackenzie said yesterday that he was pleasantly surprised at the amount of interest in the east in mining. Exhibitions such as those shown at the Coliseum, he said, should stimulate the interest and result in benefit to the mineral industry of Utah. Attendance at the mining show was very large. The Utah exhibit caused much favorable comment and drew large crowds of visitors, he said."—*Salt Lake Tribune.*

"A SPEAKER at the American Mining Congress asserted that the iron resources of the United States would last 2,000 years. But perhaps he did not take into consideration the great demand for iron on the part of the tonic-swallowing public."—*Daily Oklahoman.*

"IN CONNECTION with the annual convention of the American Mining Congress now in session in Chicago there is being held what is regarded as the greatest exposition of its kind that has ever occurred. . . . Representatives from all the great powers are present and are studying this concrete exhibition of the mineral resources of the United States. . . . Much good will undoubtedly result from the convention with its elaborate displays and it is expected that an immediate and apparent improvement will be noted throughout the entire industry."—*Mobile Register.*

"BOTH Arizona and California have done themselves proud by what they offered.

"However, these two states are not alone in their glory at the American Mining Congress convention, for there is not a western state but what has mineral wealth of some kind to exhibit, because that is typical of the entire West, and so far as we are able to learn at this time, there is not a western state but what has presented its mineral wares in proud and attractive array at the Coliseum, where they may be reviewed by the throngs of people who find their way into the great building sometime during the essions. This event not only is attractive to mining men and those directly interested in mining affairs, but it has demonstrated a surprising ability to appeal to people of every walk of life, many of whom evidently have never seen a mine."—*Los Angeles Commercial News.*

"THE NATIONAL EXPOSITION of the American Mining Congress at Chicago last week produced great results. The array of equipment and devices for use at oil, coal and metal operations was never before equalled in this country. The exhibits attracted hundreds of enterested men, all of whom were pleased."—*Scranton Times.*

PETROLEUM INVESTIGATIONS

FIELD STUDIES on losses of crude oil by evaporation from lease storage tanks have been completed by the Bureau of Mines station at Bartlesville, Okla. In one producing district a thorough study of evaporation losses was made, first, under ordinary storage conditions, and later, with the lease storage tanks equipped with gas-tight roofs. The saving due to the installation of new, up-to-date equipment amounted to from two to four barrels of oil per day for each tank covered. An investigation has been started to determine the loss of crude oil through evaporation at pipeline measuring stations, and arrangements have been made for a series of tests on a trunk pipeline from the Cushing and Glenn Pool fields to a station at Powderly, Texas.

A field investigation of pumping equipment used in the Mid-Continent field is being made by the Bureau.

Tests at the Bartlesville station on low-pressure gas burners used in oil-field boilers have been completed. Eleven low-pressure burners were tested in this investigation. Arrangements have been made to obtain additional field data on steam consumption under different drilling operations.

Work is in progress at the Pittsburgh station on the relation of sulphur, unsaturates, and gum-forming compounds to suitability for motor fuel.

A survey of the Mexia oil field in Texas will be begun shortly by the Dallas office of the Bureau of Mines. It is expected to define the strata in the proven area and to outline the best methods of production and conservation for this particular field.

PORTLAND CEMENT

BOTH production and shipments of portland cement were greater during the first ten months of 1921 than during the corresponding period of last year. There was likewise an appreciable increase during October, the tenth month, notwithstanding the seasonal trend.

The production for the first ten months of 1921, was not only greater than the production during the corresponding period of 1920, but about 10.5 percent in excess of the average for the same period during the five years 1917-1921.

Shipments for October exceeded the production and established a record. They exceeded those during the corresponding period of 1920 by about 1.5 percent and exceeded the average for the same period during the five years 1917-1921 by over 11.3 percent.

Stocks of finished cement at the mills at the end of October were approximately 5,348,000 barrels, compared with 6,953,000 barrels at the beginning of the month, and with the average of about 6,014,000 barrels for October during the last five years.

Production of clinker, or unground cement, in October was approximately 9,891,000 barrels. Clinker production for the ten months amounted to approximately 82,419,000 barrels.

The Bureau of Foreign and Domestic Commerce reports that imports of hydraulic cement in October amounted to 11,448 barrels, valued at $32,940; the total for the first ten months of 1921 was 76,878 barrels, valued at $270,180. The exports of hydraulic cement in October were 79,878 barrels, valued at $254,914; the total exports for the ten-month period were 1,013,517 barrels, valued at $3,784,370. The exports in October went to Cuba and the other West Indies, 41,395 barrels; South America, 19,989 barrels; Mexico, 12,003 barrels; Central America, 4,487 barrels; Canada, 1,278 barrels; other countries, 726 barrels. The exports for the whole year 1920 were nearly 3,000,000 barrels.

CHANCE FOR U. S. FINANCE SEEN IN SWEDEN'S SHALE FIELDS

AMERICAN CAPITAL may find "highly profitable employment" in the Swedish oil shale industry, according to consular reports reaching the Commerce Department. It is stated that a development company which recently became bankrupt has offered its plant, into which $800,000 has been placed, to the Swedish government for $130,000, but has not yet received an acceptance. An appropriation of $20,000 has been made by the Swedish government for the testing of various methods of extracting oil from shale, following the expression of opinion by prominent engineers that the deposits could be turned into sources of high profit in production of mineral oils, tar, asphalt and sulphate of ammonia. The shale deposits of the country are stated to be "enormous and practically inexhaustible."

NEW METHOD FOR TESTING THE PURITY OF GOLD

ANALYSIS of gold is to be rendered far more exact than is possible under existing methods. Experts of the Bureau of Standards, have just concluded a series of experiments in which electricity is employed to reveal the presence of even the minutest particles of impurities in the precious metal.

"While it is not expected that the new method will immediately replace the familiar furnace of the assayer," said an official of the bureau in commenting on the experiments, "it will provide a check method and a means of determining even smaller amounts of impurities than can now be detected."

Analysis by the new spectroscopic method will be faster and less expensive than those made by the assay method. The routine process, which can be repeated many times in a single day, will be, briefly: Two pieces of gold are clamped close together and a spark is allowed to play across with a potential difference of several thousand volts. A diffraction grating, which is a piece of metal on which 7,500 lines per lineal inch have been ruled, is used to break up the light which the spark creates. A permanent record of the light is made on an ordinary photographic plate which can be compared with photographs of the standard gold samples.

The set of light rays given off by each kind of metal and other element is absolutely different from any other that exists. Gold has its peculiar set of lines and all the other metals that occur as impurities in the gold can be distinguished by their own distinctive lines.

Using gold furnished by the San Francisco mint, the bureau's experts have made up a set of samples, the impurity content of which has been ascertained through use of the spectral analysis. Duplicate sets of these samples have been tested. In making them a specially refined gold was needed. The "1,000 fine" gold, which is the highest grade in the mint, was found to be only 99.997 percent pure when subjected to the new tests, whereas the gold in the samples which have recently been made up has been found to be 99.999 percent pure.

The net result is that the presence of impurities, whether they be copper, silver, iron, lead or other elements, will be discovered even though they exist in only one part to a million parts of gold. The extreme accuracy which the new system insures is evident when it is noted that an assay may be in error as much as two-hundredths of one percent, or one part in 5,000.

MINING REVIVAL IN MEXICO

FOREIGN OWNERS are returning, and other indications of a mining revival are noted in dispatches from Mexico City. Americans and Englishmen are said to be specially active. The following press dispatch also carried figures of Mexican mineral production:

"Mexico would appear to be on the eve of a great revival in the development of its mineral resources judging by the number of American and British mining engineers who are looking over the ground."

INDUSTRIAL NOTES

THE Hercules Powder Company of Wilmington, Delaware, has just issued a booklet entitled, "Flotation," by Dr. H. J. Stander, who is now flotation engineer with the Naval Stores Division of the above named company. It contains interesting information on flotation and the various oils used in the process. It has been published simply to provide information to users of flotation oils and anyone interested may obtain a free copy of this booklet by writing to the Naval Stores Division, Hercules Powder Company, Wilmington, Delaware.

W. J. Kearns early in October tendered his resignation as sales manager of the Kenova Mine Car Company, Kenova, W. Va., and announces that it has been accepted. It is his intention to go into business for himself. Mr. Kearns, prior to his connection with the Kenova Mine Car Company, was with the Hyatt Roller Bearing Company as a sales engineer and prior to that was general superintendent of the Isabella Connellsville Coke Company, Isabella, Penna. He is well known to the coal men of the Connellsville coke field.

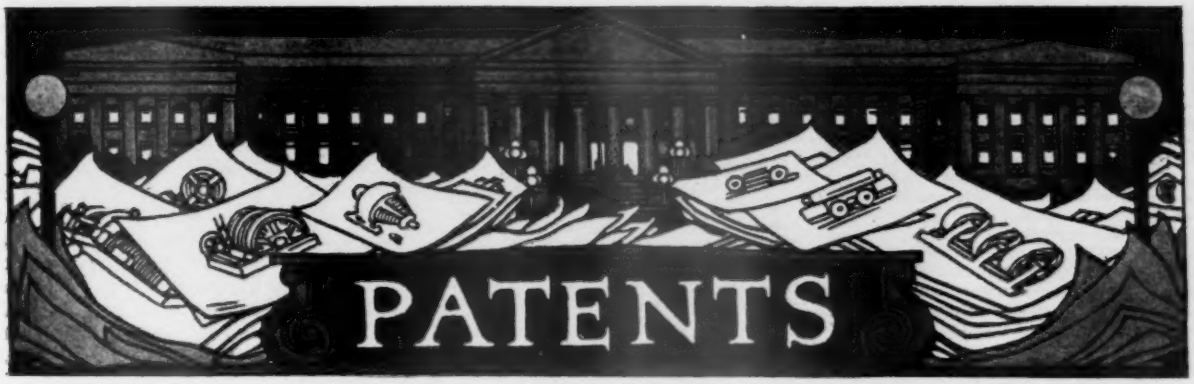
The Hercules Powder Company of Wilmington, Delaware, has just issued a booklet entitled "Volume vs. Weight," which presents to the public a phase of the explosive question which the average user very seldom considers. Every one interested in reducing blasting costs should read it. Copy of this booklet may be procured free by writing to the Advertising Department, Hercules Powder Company, Wilmington, Delaware, or to any branch office of the Hercules Powder Company.

The Wholesale Coal Company, with general offices located in the Chamber of Commerce Building, Pittsburgh, are in the market for one million tons of West Virginia, Ohio, Pennsylvania, and Kentucky coal, for shipment between October 15, 1921, and the first of April, 1922.

This company is acting as purchasing agent for three hundred consumers of coal and will require a heavy tonnage of coal over the next six months to take care of their requirements.

SIERRAS POWER LICENSE

LICENSES issued by the Federal Power Commission at its recent meeting include one granted to the Southern Sierras Power Company for a branch transmission line to be built from its trunk line to some gold mines located in San Bernardino County, Cal. A similar license was authorized for the same project to the mine operators but they relinquished their rights in favor of the power company.



CONDUCTED BY JOHN BOYLE, JR.

1,383,909—*W. J. Davis*, Accoville, W. Va., July 5, 1921.

MINERS' BREAST PLATE.

1,385,277—*A. H. Rudge*, Newark, N. J., July 19, 1921.

CHAT SEPARATOR FOR CONCENTRATING JIGS. One object of the invention is to provide a separator so constructed that it may be associated with a jig of conventional construction, and not require alteration in the construction of the jig, the separator being provided with one or more outlets for registering with the outlets of the jig.

1,385,693—*E. T. Lednum*, Denver, Colo., July 26, 1921. Assigned to E. I. du Pont de Nemours & Co.

CONCENTRATOR TABLE having a surface of pyroxylin coated fabric. Such a fabric when functioning as a concentrator table surface has been found to possess marked advantages over other surfacing materials commonly used in various arts. Thus, comparative tests have been shown that in general it will last at least twice as long as linoleum. The abrasive action of the ore, and the hydrolyinz action of the sulfuric acid which is frequently present in mine waters, soon destroys the linseed oil content of linoleum, whereas the tough, flexible film of pyroxylin protecting the fabric base, ruggedly resists abrasion and is practically immune to sulfuric acid corrosion. Linoleum freezes at low winter temperature, so that careful handling would be required should it be found necessary to recover a table during periods of low temperature, whereas the flexibility of a pyroxylin coated fabric is practically unimpaired by winter temperatures. The pyroxylin coated fabric used is white in color, so as to present a sharp contrast with the ore, and to show clearly the lines of demarcation of the flow of ore across the table, thereby permitting a closer adjustment of the table and the production of cleaner concentrates.

1,385,706, 1,385,707, 1,385,708—*J. Oliphant*, Chicago, Ill., July 26, 1921. Assigned to Sullivan Machinery Co.

AIR LIFT SYSTEMS.

1,386,252—*J. Norberg*, Latouche, Alaska, Aug. 2, 1921.

CONCENTRATE DRYER for drying ore after the same leaves the filter, sufficiently to permit shipping thereof; includes a pan structure positioned on an incline and having rollers carried by its lower end which ride over a track and its upper receiving end connected to a crank shaft which reciprocates, for jogging the pan or carrier to cause the concentrate to travel there over.

1,386,716—*R. Luckenbach*, Brooklyn, N. Y., Assigned to Luckenbach Processes, Inc.

FLOTATION PROCESS involving the use of a resinous substance as the material selective and frothing agent, and particularly the resins copal, shellac, rosin, or combinations of any two or more of them in the form of solutions made by dissolving each of them in a suitable solvent. Ammonia may be added to certain of the resins, likewise oleic acid, or animal oil or grease, such as tallow.

1,387,370—G. H. ELMORE, Swarthmore, Pa., Aug. 9, 1921.

JIG for washing coal comprising a simple automatic control for the discharge of the heavier materials separated from the lighter materials in the jig, such heavier materials being, in the case of coal washers, the slate and bone. The control device is of that type dependent upon the use of a float working in the jig bed. The discharge is controlled by a movable platform or leaf which retains a varying mass or accumulation of the discharging heavy material against the outer side of the discharge opening from the jig. The platform is moved by the float to vary the amount of material so maintained and hence to exert a varying resistance to the outflow of further material from the jig bed.

1,387,075—C. C. RUEGER, Benicia, Calif., Aug. 9, 1921.

ORE CONCENTRATOR known as bateas or pans and comprising a circular pan having a circular central rim for the discharge of tailings, and a circular peripheral rim for the discharge of concentrates, the deepest part of the pan being located along a circular channel intermediate and concentric to the said discharge rims, the pan bottom rising from said lowest level by concentric slopes to said central and peripheral discharge rims and means for producing differential oscillations, to cause upward travel of the concentrates from the lower level of the pan toward the peripheral pan and means for imparting shocks to the pan at the end of each oscillation, to accelerate this upward travel.

1,387,886—*T. Donohoe*, Edgewood, Pa., Aug. 16, 1921.

COAL MINING MACHINE for undercutting and for removing the over-hanging or undercut breast of coal as the undercutting proceeds, as distinguished from the present method of undercutting and removing the machine before dropping and loading the coal. The invention is embodied in a machine wherein a vertically shallow platform supports the undercutting means and upon which the undercut coal is adapted to be dropped either while the undercutting means is operating or at a standstill, as may be preferred, together with conveyer means for receiving the coal from the platform and delivering it directly to pit cars or wagons for removal from the mine. The invention includes a coal delivering conveyer of improved construction for receiving coal dropped on the undercut-entering platform; also mechanism of improved construction carried by the platform for moving the dropped coal to position to be taken up by said conveyer. The delivery conveyer is preferably arranged at an upward incline and with the point of delivery located in the highest portion thereof and at sufficient elevation to drop the coal into a pit car or wagon located therebeneath.

1,388,681—*W. W. Wingo*, Wilberton, Oklahoma, Aug., 23, 1921.

AUTOMATIC TRAP DOOR FOR MINES extending transversely of a mine track, means being provided whereby upon the approach of a car the door will be automatically opened and after the car has passed through it will be automatically closed, the operation being equally efficient when the car approaches from either side of the door. The door is operated entirely by trips engaged by the axle or some other portion of the car traveling over the track.

1,388,868—*F. B. Jones*, London, England, and *E. Bury*, Yorkshire, England, Aug. 30, 1921. Assigned to Minerals Separation North American Corporation.

PROCESS OF PURIFYING LIQUORS BY FROTH FLOTATION containing organic matter derived from the scrubbing of a gas obtained from coal and containing finely divided carbonaceous matter and thereby producing a froth containing said organic matter and carbonaceous matter.

1,389,066—*P. J. Murphy*, Dubois, Pa., August 30, 1921.

STEEL MINE RAIL TIE.

1,389,076—*W. W. Sloane*, Chicago, Ill., Aug. 30, 1921. Assigned to Goodman Mfg. Co.

MINING LOCOMOTIVE of the storage battery type which readily adapts itself to uneven track surfaces. Where a plurality of attached sections are used, the sections must have the desired relative movement to facilitate the passing around curves, but must be substantially rigidly connected so far as relative vertical movement among them in a vertical plane longitudimally of the vehicle is concerned so that the strains are transmitted from one section to another and in the particular construction shown from either

end section through the central section to the other end section, and so that the pull of the locomotive will not tend to lift any of the wheels off the track or unduly reduce the load thereon. This vertical rigidity, however, tends to cause some of the wheels to be lifted from the track where the track is undulating or uneven, that is, where there are depressions and hills along the rails of the track, or where one side of the track is higher than the other. One of the objects of the present invention is to, while maintaining this rigidity against relative vertical movement among the sections longitudinally thereof, at the same time provide a proper relative vertical movement between the sections about an axis substantially parallel to the line of travel of the locomotive so that the wheels will properly engage the track where the track is uneven and where all of such wheels will be on the track even when one rail is higher than the other.

1,389,184—*D. Cole and J. Bergmann*, El Paso, Texas, Aug. 30, 1921.

METHOD AND PLANT FOR STORING AND AVERING MATERIALS particularly adapted for use with ore in a finely crushed condition and in cold climates.

1,389,421—*C. S. Corrigan*, Norwood, Ohio, Aug. 30, 1921.

POWER SHOVEL for use in mines to load coal and ore in the cars comprising a small circle swing machine that digs horizontally like a steam shovel does vertically, with the shovels operating in horizontal planes when either digging or dumping, and requiring no more space above the top of the car than when the same material is loaded by hand. The shovels are dumped into cars by opening and dropping the material, and when necessary a crowd and jerk motion like a man shoveling. The operator may stack material on cars, by opening the shovels, then drawing back and closing them, and pushing the material along until the entire car is stacked full.

1,389,674—*L. D. Lyons and C. F. Hoff*, Butte, Montana, Sept. 6, 1921.

FLOTATION MACHINE provided with a floating froth cutter at the lip of each spitzkasten which will always remove a definite depth of concentrate froth, regardless of the pulp level in the spitzkasten, which may vary due to variations in the volume of the pulp fed into the first spitzkasten.

1,389,920—*P. Weaver*, Tampico, and *H. C. Craig*, Potrero del Llamo Camp, Mexico. One-half assigned to Whitehall Petroleum Corp., Ltd.

OIL WELL CASING. The oil tends to gush up through the casings, and it is customary to provide a valve to close the upper end of the casings to control the flow of the oil out of the casings. It has generally been customary to secure this valve on the top of casing of smallest diameter, this practice having the advantage of making possible the rapid closing of the valve in case of a sudden striking of oil. This practice, however, has the disadvantage of requiring the removal of the rather heavy valve each time a new section is added to the said casing and the securing of the valve to the newly added section. In accordance with this invention, the valve is preferably secured to a casing of larger diameter, and the casing of smaller diameter is passed through the valve.

1,390,080—*S. L. Boggs*, Ivanhoe, Va., Sept. 6, 1921.

OIL SEPARATOR for more effectively producing the separating froth and for causing a positive circulation of the mixtures in the apparatus. The apparatus described is particularly efficient in that the agitator is designed to produce very rapidly a dense body of suds, in that a second and supplementary agitation is provided by the small paddle wheel, and in that the division of the tank and driven agitators are adapted to produce a continuous production and expulsion of the suds.

1,390,695—*C. H. Funkey*, Ramsay, Michigan, Sept. 13, 1921.

MINE CAR LOADING SHOVEL having a longitudinal cross head slidable on cross head guides carried on top of the cars, said cross head having pivotally mounted therein a transversely slidable yoke, which yoke carries an air cylinder having a shovel carrying piston mounted therein, and means whereby the cross head and shovel may be simultaneously moved toward the front of the car during a shoveling operation.

1,390,793—*J. T. Kyle and V. W. Russell*, Brea, California, Sept. 13, 1921.

OIL TRAP FOR WELLS AND PIPE LINES having a receptacle adapted to be movably supported within the confines of an oil well derrick and in proximity to the casing head of an oil well and arranged for attachment to the pump tubing held in said casing, when it is desired or necessary for any reason to withdraw the tubing from the casing, in order to receive the substantial quantity of oil held in said tubing and to prevent the waste thereof which would otherwise ensue.

1,391,301—*J. J. Cramer*, Pine Grove, Calif., Sept. 20, 1921.

ORE MILLING MACHINE.

1,391,026—*H. B. Walling*, Salt Lake City, Utah, Sept. 20, 1921.

SCREENING AND CONCENTRATING DEVICE adapted to be employed for concentrating fine gold from ore bearing gravel, sand or mine tailings.

1,391,078—*G. C. Riser, Jr.*, McGill, Nev., Sept. 20, 1921.

AERATION CELL FOR FLOTATION MACHINES which is covered for substantially its entire length, the cover providing in effect a seal extending beyond the zone of aeration substantially to the concentrate collecting trough or launder, the cover terminating short of such launder whereby the air or other gas utilized to raise the metal particles is allowed to escape. At the same time, this construction results in the automatic skimming or driving off of the bubbles by the air used for aeration.

1,391,400—*J. J. Nevill*, Clifton Forge, Va., Sept. 20, 1921.

ORE SEPARATOR including a drum having thereon a series of electro-magnets, the drum rotating above a conveyer belt, the electromagnets being energized each as it passes over the belt to pick up particles of iron therefrom, and the several magnets being deenergized when above a chute so that the particles of iron will fall into the chute and be discharged.

1,391,531—*W. Dorton*, Leadwood, Mo., Sept. 20, 1921.

ZIG.

1,393,096—*D. L. Driscoll*, Coalinga, Calif., Oct. 11, 1921, assigned one-half to Bunting Iron Works.

FISHING APPLIANCE FOR USE IN DRILLING OPERATIONS of the spring arm or finger type, the springs of which are opposed with their free ends inclined toward each other, providing a variable opening between the free ends for the reception and engagement thereby of a member there between on the lowering of the tool within a well over the object or article to be removed on the withdrawal of the tool. The spring arms are so mounted as to incline toward each other without forming the springs or arms with curves or bends, thereby providing spring arms having great resiliency, strength, and lifting power and relatively straight throughout their entire length, thereby overcoming the liability of crystallizing or breaking when heavy objects or members are lifted thereby.

1,393,214—*A. Grandjean*, Paris, France, Oct. 11, 1921.

LOADING MACHINE comprising a gathering device consisting of a fixed basin which during the loading occupies an inclined position and penetrates with its lower edge into the materials to be loaded. In this basin there is adapted to revolve a rotary shovel which is power-driven and consists of a number of radial blades integral with each other. This rotary shovel is arranged to engage the materials to be loaded which fall by gravity into the lower part of the basin, and to lift the said materials to the upper part of said basin. The basin is pierced with an aperture at this place in such a manner that the lifted materials can drop on to a conveyer of any type.

1,393,821—*Y. Otsuka*, Tokio, Japan, Oct. 18, 1921.

FLOTATION APPARATUS constructed to increase the rate of concentration and economize frothers by mixing the ore according to its nature with suitable froth forming materials and by bringing it to perfect contact with air or any other gas.

1,394,306—*D. P. Haynes*, Evanston, Ill., Oct. 18, 1921.

FLOTATION MACHINE comprising a plurality of laterally spaced, forminated rotary disks partially submerged in the pulp and adapted to entrap air from above the surface and to carry it into the pulp, where it is liberated as bubbles to form a froth.

1,394,639—*C. L. Perkins*, Pittsburgh, Pa., Oct. 25, 1921, assigned to Metals Recovery Company.

FLOTATION AGENT comprising a solution of a solid amino compound in a liquid amino compound readily miscible with water.

1,394,640—*C. L. Perkins*, Pittsburgh, Pa., Oct. 25, 1921, assigned to Metals Recovery Company.

FLOTATION AGENT comprising a mixture of a plurality of amino compounds.

1,394,658—*A. Schwartz*, Joplin, Mo., Oct. 25, 1921, assigned to Metals Recovery Company.

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Hercules Powder Co., Wilmington, Del.
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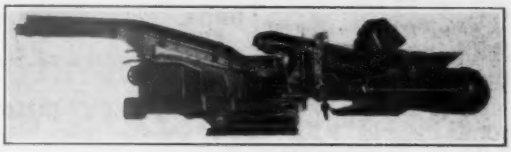

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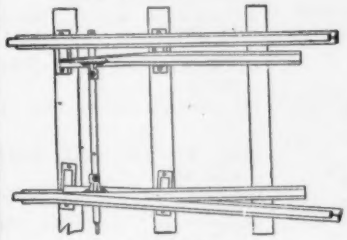

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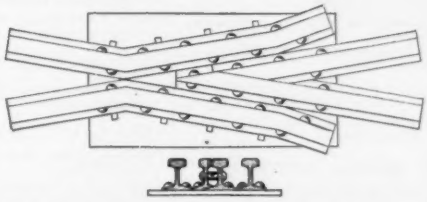

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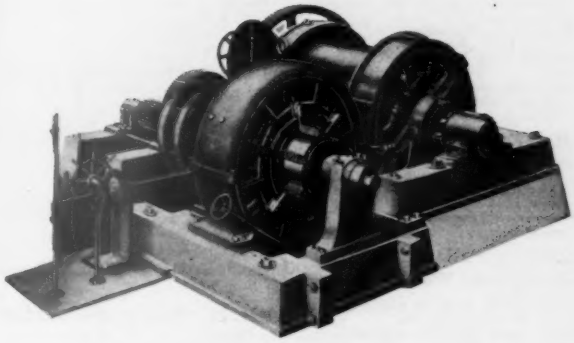

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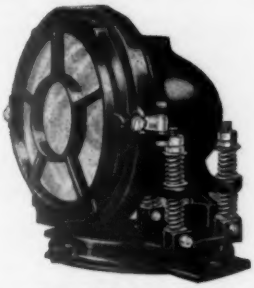

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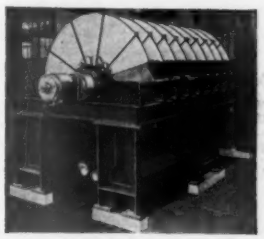

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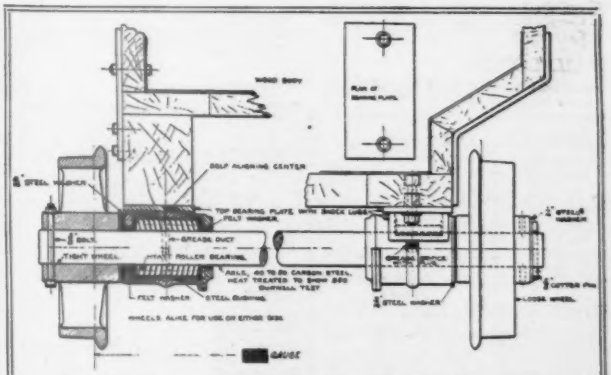

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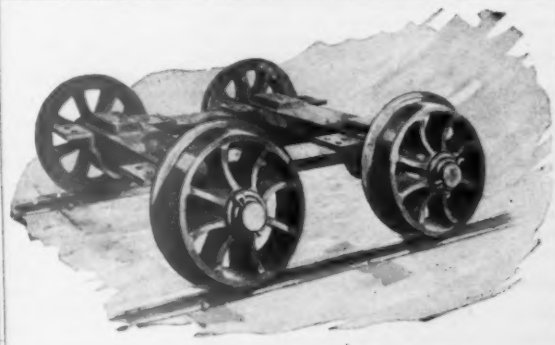

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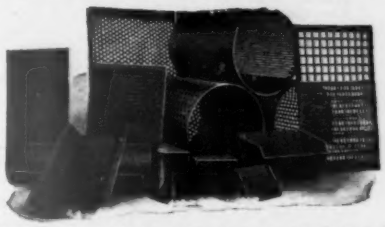

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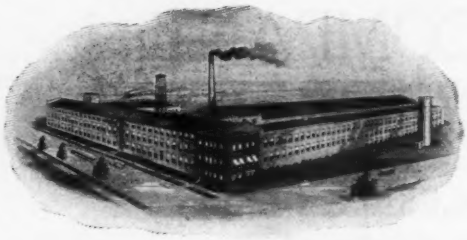

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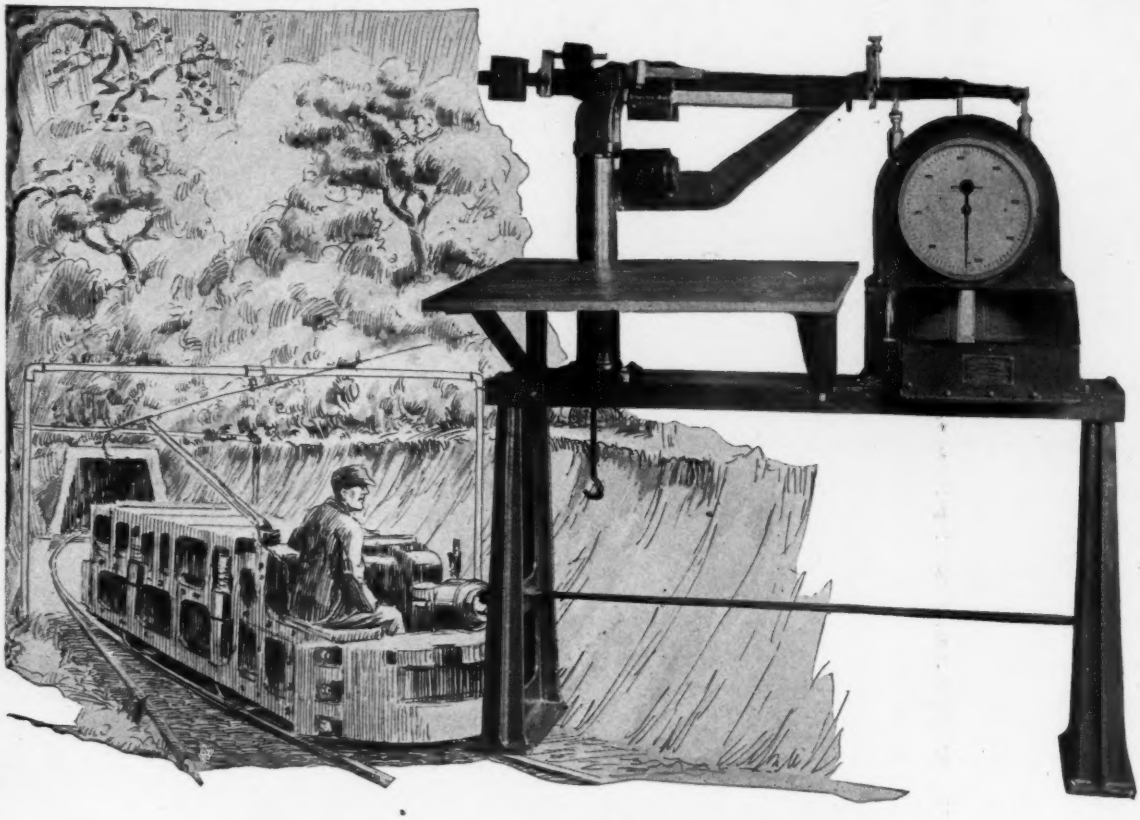

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